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THE
THREE BOOKS
OF
M. TERENTIUS VARRO K
CONCERNING
AGRICULTURE.

TRANSLATED BY
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'Εν δέ ετίσει νειὸν μαλακήν, πίειραν ἄρσεν,
Εύρειαν, τρίπολου πολλοὶ δέ αἰσθῆτες ἐν αὐτῇ
Ζεύγεα δινεύσυτες ἐλάσρεον ἔνδα καὶ ἔνδα.

HOMERI Il. xviii. 541.

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P R O C E M I U M.

THE following is a translation of a work of Varro, who was an intimate friend of Cicero, and who was much celebrated for the variety and for the extent of his learning. It is the oldest Treatise on Agriculture of any that I have any knowledge of, excepting what M. P. Cato has left us, which has come down to us greatly mutilated, and which, although a relict curious on account of its antiquity, and on account of the ancient customs, and particularly of the Roman sacrifices, which are contained in it, does not appear to have been reduced into so complete a system, as this work of Varro, which, when it came from the hands of its learned author, was in a much more finished condition, than that in

which we at this remote period find it. Having collated many copies of this work of the Roman writer in my possession, and the variations being very numerous, I found it no very easy task to make a translation of this Treatise on Agriculture. To render any common Arabic author into English, would have been a labour less difficult to me some years ago, than it has been to translate this part of the works of this celebrated writer.

I have in some places been under the necessity to palliate the meaning of the original, because there is a coarseness in the expressions, sometimes intended for pleasantry, sometimes from other circumstances, which seemed to require it. Those passages are but few ; and a more literal knowledge of them would neither add to our learning, nor yet to our virtue.

Italy has produced more translations of the Latin writers than any other country ; but I do not find that this author has been translated into Italian, or into any other language. The agricultural works of Palladius and of
the

the emperor Constantine have been translated in Italy.

It is said, that Varro was esteemed among the most learned of the Romans. He was a grammarian, a philosopher, historian and astronomer ; and he was thought to have written five hundred volumes on different subjects. His book, entitled, the Antiquities of Rome and Italy ; the Origin of Dramatic Pieces ; those which he wrote on Religion ; his Panegyrics and Pictures of great Men ; the genealogical History of the Trojan Families, which followed Æneas into Italy ; his Dictionary of the Latin Tongue, addressed to his friend Cicero ; his Historical Annals concerning the Manners and Government of the Roman people, which were dedicated to Pomponius Atticus ; his Treatise on a Country Life ; his books on Navigation, mentioned by Vegetius ; are but an inconsiderable part of his works. Whether the Satirical History of the triple Alliance between Cæsar, Pompey and Crassus, was published during the life-time of the Author, is uncertain. The title of Tricipitina, or Tricarenus,

shewed that it related to a society dangerous to the Republic, as a three-headed monster.

Varro at first pursued the same road to public honours, which the Terentii, his ancestors, had done before him. He was Lieutenant General in Spain and Asia under Pompey, with whom he contracted a very strict friendship, and was afterwards promoted to the *Ædileship*; he then set bounds to his ambition. A life of hurry was not agreeable to a learned man, whose love of letters was continually recalling him to the more quiet employments of his study.

Chronologists fix the birth of this illustrious Roman to the year of Rome 638, and his death to 726; so he must have died in the eighty-eighth year of his age.

C O N T E N T S.

B O O K I.

- I. THE Greeks and Romans, who wrote on Agriculture.
- II. What things are to be separated from Agriculture.
- III. Whether Agriculture is an art.
- IV. The principles and end of Agriculture.
- V. Of the parts of Agriculture.
- VI. Of the soil of the farm: what things are to be examined.
- VII. Which ground is best, and which is next to that.
- VIII. There are many sorts of vines.
- IX. Land may be called good, or not good, or common.
- X. How land is measured.
- XI. How a villa is to be situated, and what things belong to it.
- XII. In what situation a villa may be best placed.
- XIII. Ox-stalls, and sheep-cotes, and cellars, and wine and oil vessels are to be first made in a villa.
- XIV. Of fences, which ought to be made to protect the farm.
- XV. For what purpose fences were invented.
- XVI. Of the advantages and disadvantages, which may be extraneous in respect of the farm.
- XVII. Things necessary to culture.
- XVIII. Of the number of the family, and in what time a ground may be tilled.
- XIX.

- XIX.** How many yokes of oxen are sufficient for a certain number of acres.
- XX.** Concerning choosing oxen, and of the manner of proving them, and of taming young steers.
- XXI.** Of dogs, without which a villa is not safe.
- XXII.** How all the apparatus of farming instruments is to be provided.
- XXIII.** In what situation things must be planted.
- XXIV.** In what ground the olive may be planted, in what aspect and order.
- XXV.** In what ground the vine is to be planted.
- XXVI.** In what place the poles ought to be fixed in a vineyard, and in what part.
- XXVII.** Into how many months and seasons the year is divided, and when things must be planted, and gathered out of the field.
- XXVIII.** How many days every fourth part of the year has, &c.
- XXIX.** What must be done between Favonius and the vernal Equinox.
- XXX.** What things ought to be done between the vernal Equinox and the rising of the Vergiliæ.
- XXXI.** What must be done between the rising of the Vergiliæ and the summer Solstice.
- XXXII.** What is to be done between the summer Solstice and the Dog-star.
- XXXIII.** What must be done in the fifth interval.
- XXXIV.** What must be done in the sixth interval.
- XXXV.** What must be done in the seventh interval, between the setting of the Vergiliæ and the winter Solstice.
- XXXVI.** In the eighth interval, between the winter Solstice and Favonius, what must be done.
- XXXVII.**

- XXXVII. Of the days of the moon.
- XXXVIII. Of manure and the dunghill.
- XXXIX. Of the four kinds of planting.
- XL. Of the kinds of plants.
- XLI. Of the times for transplanting, and what things are to be observed after planting.
- XLII. Of Medica.
- XLIII. Of Cytisus.
- XLIV. How many Modii of beans, wheat, barley, and bread-corn are sown.
- XLV. When things, that are sown, come up out of the ground.
- XLVI. From what leaves the seasons of the year may be known.
- XLVII. How plantations are to be defended.
- XLVIII. The parts of an ear of corn, their names, and the reasons of having those names.
- XLIX. Of mowing, and the second mowing of meadows.
- L. Of the harvest, and why it is called so.
- LI. Of the threshing-floor.
- LII. How ears of corn are to be kept separate for seed, and of threshing.
- LIII. Of the stubble.
- LIV. Of getting in the vintage.
- LV. Of gathering the olive.
- LVI. Of hay-making.
- LVII. Of laying up wheat.
- LVIII. Of laying up beans, pulse, and grapes.
- LIX. Of keeping apples.
- LX. Of preserving the olive.
- LXI. Of preserving Amurca.
- LXII. Of taking out the fruits of the earth, that they may not be wasted.

- LXIII. How corn is to be taken out.
 LXIV. Of keeping and taking out Amurca.
 LXV. Of drawing wine.
 LXVI. Of taking out the olive for use.
 LXVII. Of nuts, and the fruit of the palm-tree.
 LXVIII. Of taking out grapes, apples, and the fruit of
 the service-tree, that were put up.
 LXIX. Of taking out the bread-corn, either for use, or
 for sowing or setting.

BOOK II.

- I. Of the origin and dignity of the flock.
 II. Of rams and lambs.
 III. Of goats and kids.
 IV. Of the swine.
 V. Concerning oxen and cows.
 VI. Concerning asses.
 VII. Concerning horses.
 VIII. Of mules and their young.
 IX. Of dogs.
 X. Of shepherds.
 XI. Of milk, cheese, wool.

BOOK III.

- I. Of the villa department.
 II. Of a perfect villa.
 III. What things are to be bred and fed in the villa and
 about it.
 IV. Of birds in general.
 V. Of thrushes.
 VI. Of peacocks.
 VII. Of pigeons.

VIII.

VIII. Of turtle doves.

IX. Of hens.

X. Of geese.

XI. Of ducks.

XII. Of hares.

XIII. Of wild boars.

XIV. Of snails.

XV. Of dormice.

XVI. Of bees.

XVII. Of fish-ponds.

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EXPLICANDA.

P. 35. A Culeus contained 20 Amphoræ or 40 Urns, 143 gallons, 3 pints, 11.095 cubic inches, in English wine measure.

35. An Amphora contained 7 gallons, 1 pint, 10.66 cubic inches.

50. Must means sweet wine before it has fermented.

82. A Modius was 1 peck, 7.68 cubic inches.

114. Quadrantal was the same as the Amphora.

115. Sapa, sometimes called Mellarium, was Must boiled to half of its original quantity.

117. Defrutum was Must boiled to one third part of its original quantity.

CORRIGENDA.

P. 48. l. 8. *for former, read latter.*

52. 1. *for Mafts, read Mast, or Acorns.*

176. 6. *for an Ass, read a Mule.*

201. 2. *for the whole, read a whole.*

LIFE OF VARRO.

CICERO, speaking of Varro, says, "When Atticus was with me lately, at my villa near Cumæ, news was brought to us, that Marcus Varro was come from Rome the day before, in the evening; and that, if he had not been fatigued, he would have come to us: which when we had heard, we thought we ought not to delay seeing a person attached to us by the same pursuits and former friendship. Wherefore we immediately set out; and when we were but a short way from his villa, we saw him coming to us; and having embraced him, as is the custom among friends, we conducted him to his villa, which was at a moderate distance. Here, while we were asking a few questions, and the

news at Rome, Atticus says, Leave off, I pray, and do not enquire after things which we cannot hear without pain; but rather ask what I know; for Varro's muses are longer silent than they used to be; but I do not think that he gives up, but that he conceals what he writes. By no means, says he; for I think that he must be a whimsical man to write what he wishes to conceal. But I have a great work in hand, which I have long intended for this person, (he mentioned me,) in which there are some things indeed of importance, and which are rather more correct than common. I reply, I have been long expecting these things, Varro, and I dare not demand them with importunity; for I have heard from Libo, whose application you are acquainted with, (for we cannot conceal any thing of this kind) that you do not discontinue, but that you go on with great accuracy, and that you never lay these things aside. But it never occurred to me before to enquire of you. But now, as I have entered on those things that I learned at the same time with you, to record and to illustrate the ancient philosophy, that had its origin from Socrates, I wish to know how it is, that, since you write a great deal, you pass over this kind, especially

cially as you excel in that, and as that pursuit and that subject are far superior to other studies and arts. He replies, You ask a question concerning what I often discussed and thought of; therefore I will answer without hesitation, and I will immediately say, that I have bestowed many a thought on that very subject, as I said before. For when I saw the ancient philosophy most accurately laid down in Greek, I thought, if any of our countrymen were partial to the study of it, if they were learned in Greek, they would read it in Greek rather than in our language; but if they had an aversion to the arts and learning of the Greeks, they would not trouble themselves about these things, which cannot be understood without Greek erudition. Therefore I was unwilling to write such things as the unlearned might not understand, or such as the learned might not care to read. You see things in the same light, for you have learned that we cannot be like Amafanius and Rabirius, who, without any pains, dispute on subjects laid before them in common language; they do not define, they do not arrange, they form no regular conclusions; finally, they think that there is no art in speaking and disputing: but we, obeying the precepts of the

logicians and orators as laws (because our countrymen think that each has its weight), are forced to use words that are coined; which the learned, as I said, wish to borrow from the Greeks; the unlearned do not receive them from us, for it may be lost labour. Now I might write concerning natural philosophy as explicitly as Amafanius, if I approved of Epicurus and Democritus; for what task is it, when you take up the efficient causes, to speak of the fortuitous concurrence of little bodies, for thus they call atoms? You know our philosophy, which, as it consists of efficiency, and of matter, which that efficiency forms, for we must have recourse to matter: for how will any one be able to express himself, or how will he bring any person to understand these things concerning life and morals, and what we are to pursue, and what to avoid? For they think that the happiness of the brute creation and that of man is simply the same. You know what great subtlety there is among our Philosophers. For whether you follow Zeno, it is a difficult thing for any one to understand what that true and genuine goodness is, which cannot be separated from probity; which goodness is of that kind, that Epicurus denies totally to have any notion of

of it without pleasures affecting the imagination; or if we follow the old Academy, which we, you know, approve of, how must that be explained by us? How quaintly, how enigmatically, must we dispute against the Stoicks! I therefore take all that study of philosophy to myself, as much as I can, which promotes an uniformity of life, and what gives delight to the mind; nor do I think that any greater or better gift was bestowed by the gods on man, as Plato says. But I send my friends to Greece to study; that is, I order them to go among the Grecians, that they may draw from fountains, rather than follow small streams. The things which none had yet taught, nor was there an opportunity for the studious to know them, I caused those things to be known by our countrymen as much as I was able, (for I do not look on any thing of mine as a great work;) for they could not be sought from the Greeks, or indeed from the Latins after the death of our L. *Ælius*. And in those ancient writers of ours, we, imitating, not expounding Menippus, have seasoned those things with some mirth, with a mixture of our own philosophy, and logick; that the unlearned might with more ease understand them, being invited to read with some de-

gree of pleasure; in our panegyricks, in our introduction to philosophy, we wished to write thus, if we have but attained what we intended.

" Then I reply, These things are so, Varro, for your books brought us home as it were, while we were foreigners in our own city, and wandering like strangers, that we might know who and where we were. You have laid open the chronology of your country, a description of the seasons, the laws of religion, the ordinances of the priests, domestic and warlike occurrences, the situation of countries and places, the names of all things divine and human, the breed of animals, moral duties, the origin of things; and you have thrown a great deal of light on our poets by your learning and conversation; and you have composed various and elegant works in almost every kind of verse; and you have in many places entered on topics of philosophy sufficient to allure, though not deep. You indeed advance what is probable; that the learned choose to read things in Greek: but let not them, that do not understand Greek, be ignorant of these things. But give me your opinion, do you approve of this? Indeed they who do not understand these things,

things, and do understand Greek, will not despise their own. For what is the reason, that they who are learned in Greek read the Latin poets, and do not read the Latin philosophers? Is it because Ennius, Pacuvius, Accius, and many others, please, who have not only expressed themselves in the terms, but with the energy of the Greeks? How much more will the philosophers please, if, as the others imitate Æschylus, Sophocles, Euripides, these pursue Plato, Aristotle, Theophrastus? Indeed I see that the orators are in esteem, as some of ours have copied Hyperides, or Demosthenes. But I, (for I will speak the truth) while ambition, honours, suits; while not only anxiety for the Republic, but also some office confined me involved and bound in many duties, had these things at heart; and, when I had an opportunity, renewed them by reading, lest they should become obsolete. But now, being smitten with a very heavy stroke by the hand of Fortune, and freed from the administration of public affairs, I seek a remedy to my grief from philosophy; and I look on this to be the most honourable pleasure in retirement; and this is best adapted to this age, and this is most suitable to those things, if we have performed any worthy of applause: and there is

nothing more useful to instruct our citizens; and if this is not the case, I see nothing else for us to do. Indeed our Brutus, excelling in every thing that is laudable, pursues philosophy in the Roman authors so, that he wants no aid from Greece, and he follows the same opinion as you do; for he heard Aristus at Athens some time, whose brother Antiochus was your master; wherefore, I beseech you, apply yourself to this kind of literature." *Academicorum lib. i.*

Quintilian, speaking of satire, says, "There is another kind of satire of pre-eminence, which Terentius Varro, a man of the greatest learning among the Romans, wrote in a variety of numbers. This man composed many very learned books, being very skilful in the Latin tongue, and in all branches of antiquity, and in the affairs of Greece and of our own country; but more to be admired for his knowledge than eloquence." Lib. x. cap. I.

"How many things hath Varro written, yea almost on every subject!" Lib. xii. cap. II.

"The age of Cicero and C. Cæsar had few men distinguished for their eloquence; but its

its chief ornaments, for diversity of knowledge and various arts, by which human learning was improved, were Marcus Varro, and Publius Nigidius." *Aul. Gellius*, lib. xvii. cap. 14,

"When we were desirous of being initiated and brought forward in the study of Dialectics, it was necessary to have recourse to, and to understand, what the logicians call preliminaries; and in the first place to learn the axioms, which Marcus Varro sometimes calls principles, sometimes maxims. We eagerly enquired after the Commentary of L. Ælius, a man of learning, who was Varro's master, concerning first principles, and read it after we had found it in the library of the Temple of Peace." *Aul. Gell.* lib. xvi. cap. 8.

"Marcus Varro, than whom none was more learned either among the Greeks or the Latins, in his book on subjects of divinity, which he wrote to C. Cæsar, chief Pontiff, when he spoke of the Quindecimviri, says, that the Sibylline Books were not the production of one Sibyl, but that they were called Sibylline, because all the female sooth-sayers are called Sibyls by the ancients." *Lactantius*, lib. i. cap. 6.

The following passages are transcribed from the Georgics of Virgil, in which that celebrated Poet appears to have the works of Varro in view. Whoever will read the Georgics with attention, may find out a much closer connection between these two celebrated writers, than there is between the Author of the Georgics, and the two celebrated Greek writers, Hesiod and Aratus.

G E O R. I.

QUID faciat lætas segetes : ^a quo fidere terram
Vertere, Mæcenas, ^b ulmisque adjungere vites,
Conveniat : ^c quæ cura boum, qui cultus habendo
Sit pecori : atque ^d apibus quanta experientia parcis :

^a _____ *quo fidere terram*
Vertere.

Virgil seems to have Varro's directions for ploughing in view; which are given in the twenty-ninth and following chapters of the first book.

^b _____ *ulmisque adjungere vites.*

Virgil here alludes to the Arbustum of Cato and Varro.

^c _____ *quæ cura boum.*

He might here possibly have the fifth chapter of the second book in his mind, when he wrote this.

^d _____ *apibus quanta experientia parcis.*

Varro, book iii. chap. 16.

Hinc

Hinc canere incipiam. Vos, O clarissima mundi
 Lumina, labentem cœlo quæ ducitis annum,
 • Liber et alma Ceres.—

What culture crowns the laughing fields with corn,
 Beneath what heavenly signs the glebe to turn,
 Round the tall elm how circling vines to lead,
 The care of oxen, cattle how to breed,
 What wondrous arts to frugal bees belong,
 Mæcenas, are the subjects of my song.

Lights of the world ! Ye highest orbs on high,
 Who lead the sliding year around the sky,
 Bacchus and Ceres.

— — — — — vestro si munere tellus
 Chaoniam pingui glandem mutavit arista,
 Poculaque inventis Acheloia miscuit uvis.

Bacchus and Ceres, by whose gifts divine,
 Man chang'd the crystal stream for purple wine,
 For rich and foodful corn Chaonian mast.

Chaonia is here used for Epirus, which is so celebrated by Varro for its breed of cattle.

Dique deaque omnes, studium quibus arva tueri ;
 Quique novas alitis ^f nonnullo semine fruges.

Come,

• *Liber et alma Ceres* ;—

See Varro's invocation at the beginning of the first Book.

^f — — — — — nonnulle semine.

Unde prima, que sine colono, priusquam fata, nata sunt : secunda,

Come, all ye gods and goddesses, who hear
The suppliant swains, and bless with fruits the year.

————— Ergo age, terræ
Pingue solum primis extemplo a mensibus anni
Fortes invertant tauri.

Come on then; yoke and sweat thy sturdy steer
In deep rich soils, when dawns the vernal year.

See Varro, lib. i. cap. 29.

————— neque illum
Flava Ceres alto nequicquam spectat Olympo:
Et qui, proscissō quæ suscitat æquore terga,
Rursus in obliquum verso perrumpit aratro:
Exercetque frequens tellurem, atque imperat arvis.

Who ploughs across and back, with ceaseless toil
Subdues to dust, and triumphs o'er the soil;
Plenty to him, industrious swain, is giv'n,
And Ceres smiles upon his works from heav'n.

Directions for ploughing and cross ploughing
are given by Varro, and other agricultural writers.

Humida solstitia atque hyemes orate serenas.

Ye husbandmen, of righteous heav'n intreat
A winter calm and dry, a solstice wet.

cunda, quæ ex his collecta, neque priusquam fata, nata. Varro,
lib. i. cap. 40.

Virgil

Virgil here uses *solsticia* the same as Varro, that is, for the summer solstice, which is used in the same sense by all classical writers. *Bruma* is the winter solstice.

Possim multa tibi veterum præcepta referre,
Ni refugis, tenuesque piget cognoscere curas.
Area cum primis ingenti æquainda cylindro;
Et vertenda manu, et creta solidanda tenaci:
Ne subeant herbæ, neu pulvere victa fatiscat:
Tum variæ illudunt pestes. Sæpe exiguus mus
Sub terris posuitque domos, atque horrea fecit:
Aut oculis capti fodere cubilia talpæ.
Inventusque cavis bufo, et quæ plurima terræ
Monstra ferunt: populatque ingentem farris acervum
Curculio, atque inopi metuens formica senectæ.

More ancient precepts could I sing, but fear
Such homely rules may grate thy nicer ear;
To press the chalky floor more closely down,
Roll o'er its surface a cylindric stone;
Else thro' the loosen'd dust, and chinky ground,
The grass springs forth, and vermin will abound.
Oft working low in earth, the tiny mouse
Her garner makes, and builds her secret house;
Their nest and chambers scoop the eyeless moles,
And swelling toads that haunt the darksome holes;
The weasel heaps consumes, or prudent ant
Provides her copious stores, 'gainst age or want.

See Varro, lib. i. cap. 51. M. P. Cato writes on this subject in the ninety-first Chapter of his Book on Husbandry.

Vere fabis satio : tum te quoque, Medica, putres
 Accipiunt fulci ; et milio venit annua cura :

Sow beans in spring ; in spring, the crumbling soil
 Receives thee, lucerne, Media's flowery spoil ;
 But still to millet give we annual care, &c.

Varro has written a Chapter on the cultivation
 of lucerne, lib. i. cap. 42. He has also given di-
 rections concerning raising beans and millet.

Nunc torrete igni fruges, nunc frangite saxo.

Now grain be ground with stones, now parch'd upon
 the stove.

Parching of corn, and the management of it
 in the Pistrinum, are mentioned by Varro and
 Cato.

Ipsa dies alios alio dedit ordine Luna
 Felices operum.

For various works behold the moon declare
 Some days more fortunate.

See Varro, lib. i. cap. 37.

G E O R. II.

HACTENUS arorum cultus, et sidera cœli :
 Nunc te, Bacche, canam, necnon sylvestria tecum
 Virgulta,

Virgulta, et prolem tarde crescentis olivæ.
 Huc, pater O Lenæe : tuis hic omnia plena
 Muneribus, tibi pampineo gravidus autumno
 Floret ager, spumat plenis vindemia labris.
 Huc, pater O Lenæe, veni : nudataque musto
 Tinge novo mecum direptis crura cothurnis.
 Principio arboribus varia est natura creandis.
 Namque aliæ, nullis hominum cogentibus, ipsæ
 Sponte sua veniunt, camposque et flumina late
 Curva tenent : ut molle filer, lentaque genistæ,
 Populus, et glauca canentia fronde salicta.
 Pars autem posito surgunt de semine : ut altæ
 Castaneæ, nemorumque Jovi quæ maxima frondet
 Æsculus, atque habitæ Graiis oracula quercus.
 Pullulat ab radice aliis densissima sylva :
 Ut cerasis, ulmisque : etiam Parnassia laurus
 Parva sub ingenti matris se subjicit umbra.
 Hos natura modos primum dedit : his genus omne
 Sylvarum fruticumque viret, nemorumque sacrorum.
 Sunt alii, quos ipse via sibi repperit usus.
 Hic plantas tenero absindens de corpore matrum
 Deposuit sulcis : hic stirpes obruit arvo,
 Quadrifidasque fudes, et acuto robore vallos :
 Sylvarumque aliæ pressos propaginis arcus
 Expestant, et viva sua plantaria terra.
 Nil radicis egent aliæ : sumimumque putator
 Haud dubitat terræ referens mandare cacumen.
 Quin et caudicibus sectis, mirabile dictu,
 Truditur e sicco radix oleagina ligno.
 Et saepe alterius ramos impune videmus
 Vertere in alterius, mutataisque insita mala
 Ferre pyrum, et prunis lapidosa rubescere corna.
 Quare agite, O proprios generatim discite cultus,

Agricolæ, fructusque feros mollite colendo.
 Neu segnes jaceant terræ : juvat Ifmara Baccho
 Conferere, atque olea magnum vestire Taburnum.

Thus far of tillage, and the heav'ly signs ;
 Now thee I sing, O Bacchus, God of Vines !
 With thee the various race of sylvan trees,
 And olives, blooming late by slow degrees.

Come, sacred Sire, with luscious clusters crown'd,
 Here all the riches of thy reign abound ;
 Each field replete with blushing autumn glows,
 And in deep tides for thee the pregnant vintage flows.
 O come, thy buskins, sacred Sire, unloose,
 And tinge with me thy thighs in purple juice.

Kind nature trees, by several means, supplies,
 Spontaneous some, by art untaught, arise ;
 At will, by brook, in lawn or meadow, bloom
 Th' obedient osier, and the bending broom ;
 While with the poplar on the mazy shore
 The willow weaves its azure foliage hoar.
 Part by the force of quick'ning seed arise ;
 Hence tow'rs the lofty chesnut to the skies ;
 And Æsculus, great monarch of the grove,
 Supreme and stateliest of the trees of Jove ;
 With the proud oak, beneath whose awful shade
 Religious rites fond Greece devoutly paid.
 Some pour an infant forest from their roots ;
 Thus elms and cherries spring in frequent shoots.
 Thus too, their tender tops Parnassus' bays,
 Beneath their mother's sheltering shadow, raise.
 So spring, as nature various means approves,
 Or woods, or shrubs, or consecrated groves.

Yet other means has sage experience found ;
 This, from the mother trunk, within the ground
 The tender sucker sets ; another takes
 Of larger growth, cross split, or sharpen'd stakes.
 And oft, in native earth, the boughs we see
 Inverted, multiply the parent tree ;
 Nor fears the gardener oft, the smallest shoot
 To trust to earth ; some ask not for a root.
 Oft from cleft olive trunks with age decay'd
 New fibres shoot, and springs a wondrous shade.
 Ev'n diff'rent trees a mutual change assume,
 And still improv'd, with alien foliage bloom ;
 By pear-trees are ingrafted apples borne,
 And stony cornells blushing plums adorn.

Search then, ye farmers, with sagacious mind,
 How best to manage every various kind.
 With culture civilize your savage trees,
 Nor let your lands lie dead in slothful ease.
 What joy the grapes on Ismarus to crop,
 And clothe with olives huge Taburnus' top !

Virgil in this Introduction to the second Book of the Georgicks seems to follow Varro's rules for planting. See Varro, lib. i. cap. 24, 25, 39, 40, &c. The ancient writers on husbandry believed there was a spontaneous generation of trees : they likewise treated of the propagation of trees from suckers, layers, cuttings and grafting, as methodically and as explicitly as modern gardeners do.

Sed truncis olæ melius, propagine vites
 Respondent.

With-

With best success from truncheons olives spring ;
 Layers of the vine the fairest clusters bring.

See Varro, lib. i. cap. 24. et 25.

————— supereft deducere terram
 Sæpius ad capita.

About the roots oft turn the neighbouring soil.

Capita here mean the roots. Agricultural writers use this word in the same sense.

G E O R. III.

Seu quis, Olympiacæ miratus præmia palmæ,
 Pascit equos, seu quis fortes ad aratra juvencos ;
 Corpora præcipue matrum legat. Optima torvæ
 Forma bovis, cui turpe caput, cui plurima cervix,
 Et crurum tenus a mento palearia pendent.
 Tum longo nullus lateri modus : omnia magna :
 Pes etiam, et camuris hirtæ sub cornibus aures.
 Nec mihi displiceat maculis insignis et albo :
 Aut juga detrectans, interdumque aspera cornu,
 Et faciem tauro propior, quæque ardua tota,
 Et gradiens ima verrit vestigia cauda.
 Ætas Lucinam justosque pati Hymenæos
 Desinit ante decem, post quatuor incipit annos :
 Cætera nec fœturæ habilis, nec fortis aratris.
 Interea, superat gregibus dum læta juventus,
 Solve mares : mitte in Venerem pecuaria primus,
 Atque aliam ex alia generando suffice prolem.

The youth, who studious of th' Olympic meed,
 And fond of fame, would rear the stately steed,
 Or bend the sturdy bullock to the share,
 Must choose the dam with nice sagacious care.
 First, by these marks select thy mother-cow ;
 A clumsy head, broad neck, and lowering brow ;
 Her double dew-lap from her chin must rise,
 In spacious folds descending o'er her thighs :
 Be hers a disproportion'd length of side,
 Her limbs all fram'd with vast unwieldy pride :
 Let tufts of hair her ample feet adorn,
 Rough be her ear, and wreath'd her bending horn :
 Nor less her worth, if o'er her jetty skin
 Few random spots of snowy white be seen ;
 Or if she aim a blow, or spurn the yoke,
 Or wear a stern brow'd bull's rough threat'ning look.
 Majestic she must walk with lofty mien,
 And proudly sweep with length of tail the green.
 When now four years have steel'd her lusty frame,
 Then let her prove kind Hymen's mutual flame :
 At ten release her ; now no more to prove
 The toils of culture, or the joys of love.
 Meantime, while warmth of youthful blood prevails,
 To the soft blis admit thy sprightly males :
 Let their first vigour try the fierce embrace,
 So herds shall rise on herds, and race on race.

See Varro, lib. ii. cap. 5.

Nec non et pecori est idem delectus equino.
 Tu modo, quos in spem statues submittere gentis,
 Præcipuum jam inde a teneris impende laborem.
 Continuo pecoris generosi pullus in arvis
 Altius ingreditur, et mollia crura reponit.

Primus

Primus et ire viam, et fluvios tentare minaces
 Audet, et ignoto sese committere ponti :
 Nec vanos horret strepitus : illi ardua cervix,
 Argutumque caput, brevis alvus, obesaque terga :
 Luxuriatque toris animosum pectus : honesti
 Spadices, glaucique ; color deterrimus albis,
 Et gilvo. Tum, si qua sonum procul arma dedere,
 Stare loco nescit ; micat auribus, et tremit artus,
 Collectumque fremens volvit sub naribus ignem.
 Densa juba, et dextro jaetata recumbit in armo.
 At duplex agitur per lumbos spina, cavatque
 Tellurem, et solido graviter sonat ungula cornu.

These rules direct alike to choose the steed ;
 And if you wish to rear a generous breed,
 Nurse from his earliest youth the chosen fire,
 And feed with careful hand his native fire.
 Ev'n now the colt treads high with stately pace,
 And moves with pliant limbs, with easy grace ;
 Outstrips the rest ; the first that dares to brave
 The unknown bridge, or tempt the threat'ning wave :
 No sudden sounds alarm his soul with dread ;
 Sublime his arched neck, and small his head ;
 Short paunch and breadth of back his might attest,
 And prominent with brawn his fearless breast.
 Of colours choose the dapple or the grey,
 For white and dun a dastard race betray.
 Lo ! when the battle's distant din he hears,
 Restless he paws, erects his eager ears :
 With generous fury glows his quivering frame,
 And from his nostril bursts the fierce collected flame.
 O'er his right shoulder his redundant mane
 Waves to the zephyr, as he skims the plain.

Thro' his broad back shoots a divided spine,
 And arms with double force his mighty chine.
 While o'er the green as his fleet hoof is borne,
 Echoes the trembling ground beneath the solid horn.

Varro, lib. ii. cap. 7.

His animadversis, instant sub tempus, et omnes
 Impendunt curas denso distendere pingui,
 Quem legere ducem, et pecori dixerit maritum:
 Pubentesque secant herbas, fluviosque ministrant,
 Farraque, ne blando nequeat supereesse labori,
 Invalidique patrum referant jejunia nati.
 Ipsa autem macie tenuant armenta volentes:
 Atque ubi concubitus primos jam nofa voluptas
 Sollicitat, frondesque negant, et fontibus arcant.
 Sæpe etiam cursu quatiant, et sole fatigant,
 Cum graviter tunsis gemit area frugibus, et cum
 Surgentem ad zephyrum paleæ jactantur inanes.
 Hoc faciunt, nimio ne luxu obtusior usus
 Sit genitali arvo, et fulcos oblitet inertes;
 Sed rapiat sitiens Venerem, interiusque recondat.

These rules observ'd, with fattening plenty feed
 The husband of the herd, and father of thy breed;
 With genial herbs his amorous heat sustain,
 And give the copious stream, and golden grain;
 Lest weak he faint amid the soft embrâce,
 The famish'd father of a puny race.
 But to the mares deny thy soft'ning food,
 And drive them from the browze and cooling flood,
 When now the new desires invade their boiling blood: }
 Oft bid them glow beneath the sunny ray,
 And oft fatigue them thro' the dusty way:

When

When groan the floors beneath the trampled corn,
 And light in air the fluttering chaff is borne ;
 Lest too luxurious ease and plenty cloy,
 Blunt the keen sense, and choak the paths of joy :
 So shall the female feel the flowing seed,
 And fuck with greedy rage the rushing steed.

Varro, lib. ii. cap. 5. et 7.

Continuoque avidis ubi subdita flamma medullis,
 Vere magis (quia vere calor reddit ossibus) illæ
 Ore omnes versæ in zephyrum, stant rupibus altis,
 Exceptantque leves auras : et sœpe sine ullis
 Conjugiis, vento gravidæ (mirabile dictu)
 Saxa per et scopulos et depresso convales
 Diffugiunt : non, Eure, tuos, neque Solis ad ortus,
 In Boream, Caurumque, aut unde nigerrimus Auster
 Nascitur, et pluvio contristat frigore cœlum.
 Hinc denum, Hippomanes vero quod nomine dicunt
 Pastores, lento distillat ab inguine virus.
 Hippomanes, quod sœpe malæ legere novercæ,
 Miscueruntque herbas, et non innoxia verba.
 Sed fugit interea, fugit irreparabile tempus,
 Singula dum capti circumvectamur amore.

When now their veins the vernal mildness warms,
 And with kind heat their lusty limbs informs,
 To the tall cliffs impatient they repair,
 And from the westward snuff the fleeting air :
 Where (wondrous power) without th' assisting steed,
 Made pregnant by the parent-breeze they breed.
 Thence wild o'er rocks and deep funk vallies stray,
 Far from the northern blast, or source of day ;

Or whence wet Auster's gloomy damps arise
 To hang with sable clouds the fadden'd skies.
 Hence from their wombs, what th' artless shepherd calls
 Hippomanes, a trickling poison falls ;
 Which baleful stepdames in the bowl infuse,
 With many murmurs mix'd, and herbs of magic juice.
 But time is on the wing ; too far we rove,
 Bewilder'd in the pleasing paths of love.

Varro lib. ii. cap. 7.

G E O R. IV.

*Principio sedes apibus statioque petendæ,
 Quo neque sit ventis aditus (nam pabula venti
 Ferre domum prohibent.)*

First for your bees a shelter'd station find,
 Impervious to the gusts of rushing wind ;
 Rude blasts permit them not, as wide they roam,
 To bring their food and balmy treasures home.

Varro, lib. iii. cap. 16.

*Hinc ubi jam emissum caveis ad fidera cœli
 Nare per æstatem liquidam suspexeris agmen,
 Obscuranique trahi vento mirabere nubem ;
 Contemplator : aquas dulces et frondea semper
 Tecta petunt : huc tu jussos asperge sapores,
 Trita meliphylla, et cerinthæ ignobile gramen :
 Tinnitusque cie, et matris quate cymbala circum.
 Ipsæ confident medicatis fedibus : ipsæ
 Intima more suo se se in cunabula condent.*

Burst from their cells if a young troop be seen,
 That fails exulting through the blue serene,
 Driv'n by the winds, in clouds condens'd and dark,
 Observe them close, the paths they steer remark ;
 They seek fresh fountains, and thick shady bowers,
 'Tis then the time to scatter fragrant flowers,
 Bruis'd balm, and vulgar cerinth spread around,
 And ring the tinkling brass, and sacred cymbals found ;
 They'll settle on the medicated seats,
 And hide them in the chambers' last retreats.

Sed si quem proles subito defecerit omnis,
 Nec genus unde novæ stirpis revocetur, habebit ;
 Tempus et Arcadii memoranda inventa magistri
 Pandere, quoque modo cæsis jam sæpe juvencis
 Insincerus apes tulerit crux. Altius omnem
 Expediam, præmna repctens ab origine, famam.
 Nam quæ Pellæi gens fortunata Canopi
 Accolit effuso stagnantem flumine Nilum,
 Et circum pœtis vehitur sua rura phæselis ;
 Quaque pharetratæ vicinia Persidis urget,
 Et viridem Ægyptum nigra fœcundat arena,
 Et diversa ruens septem discurrit in ora
 Usque coloratis aënnis devexus ab Indis ;
 Omnis in hac certam regio jacit arte salutem.
 Exiguus primum, atque ipsos contractus ad usus
 Eligitur locus : hunc angustique imbrice tecti
 Parietibusque premunt arctis, et quatuor addunt
 Quatuor a ventis obliqua luce fenestras.
 Tum vitulus, bima curvans jam cornua fronte,
 Quæritur : huic geminæ nares, et spiritus oris
 Multa reluctanti obstruitur ; plagiisque perempto
 Tunsa per integrum solvuntur viscera pellem.

Sic

Sic positum in clauso linquunt : et ramea costis
 Subjiciunt fragmenta, thymum, casiasque recentes.
 Hoc geritur, Zephyris primum impellentibus undas,
 Ante novis rubeant quam prata coloribus, ante
 Garrula quam tignis nidum suspendat hirundo.
 Interea teneris tepefactus in ossibus humor
 Estuat, et visenda modis animalia miris,
 Trunca pedum primo, mox et stridentia pennis
 Miscentur, tenuemque magis, magis aera carpunt :
 Donec, ut aestivis effusus nubibus imber,
 Erupere : aut ut nervo pulsante sagittæ,
 Prima leves ineunt si quando prælia Parthi.
 Quis Deus hanc, Musæ, quis nobis extudit artem ?
 Unde nova ingressus hominum experientia cepit ?

But should your stock decay through dire disease,
 Nor hope remain new families to raise,
 Hear the strange secret I shall now impart,
 The great Arcadian master's matchless art ;
 An art to reproduce th' exhausted store
 From a slain bullock's putrifying gore :
 I'll to its distant source the wondrous tale explore.

Where happy the Canopian nation dwells,
 Where Nile with genial inundation swells,
 Where swains, the meadows while he largely floats,
 Around their pastures glide in painted boats,
 From tawny India while he rolls his tides,
 And into seven huge mouths his stream divides,
 And pressing close on quiver'd Persia's clime,
 Green Egypt fattens with prolific slime ;
 These swains, when grows extinct their honied race,
 Sure hope and refuge in this practice place.
 First for the work they choose a narrow groun',

With

With straighten'd walls and roof embrac'd around :
 Fronting the winds four windows add, to strike
 Athwart the twilight space their beams oblique :
 Then seek in prime of youth a lusty steer,
 Whose forehead crooked horns begins to wear :
 His mouth and nostrils stop, the gates of breath,
 And buffet the indignant beast to death ;
 Till the bruis'd bowels burst with many a stroke :
 But still th' external skin remains unbroke.
 Then leave him dead ; his putrid limbs below,
 Green twigs and thyme, and recent cassia strew.
 Be this perform'd when zephyr's balmy breeze
 First curls the surface of the smiling seas,
 Ere bloom the meads in crimson vesture drest,
 Ere swallows twitter o'er the new-built nest.
 The tainted juices, in this prison pent,
 Begin to boil, and through the bones ferment ;
 A wondrous swarm strait from the carcass crawls,
 Of feetless and unfinish'd animals ;
 Anon their infant buzzing wings they try,
 And more and more attempt the boundless sky :
 And last embody'd from their birth-place pour,
 Thick as from copious clouds a summer-show'r,
 Or flight of arrows, when with twanging bows
 The Parthians in fierce onset gall their foes.

What God, ye Nine, this art disclos'd to man,
 Say whence this great experiment began ?

Varro, lib. iii. cap. 16.

The Translation is Dr. Warton's.

M. TERENTIUS VARRO

CONCERNING

AGRICULTURE.

BOOK I.

CHAP. I.

IF I had leisure, Fundanias, I might write these things more conveniently, which I will now explain as well as I am able; thinking that I must make haste; because, if man is a bubble of air, I am far advanced in years; for my eightieth year admonishes me to get my baggage together before I leave the world. Wherefore, as you have bought a farm, which you are desirous to render profitable by tillage, and as you ask me to take this task upon me, I will try to advise you what must be done, not only during my life-time, but likewise after I am dead. Nor will I suffer the Sybil alone to celebrate the things which were useful to mankind, while she lived, and even when she had expired, and to men the most unknown; to whose books we usually recur many years afterward, when we wish to know what we are to do after some prodigy; which my friends may do when I am dead.

I will

I will write three books for your instruction, to which you may have recourse, if you make enquiry what you are to do in Husbandry. And because the Gods assist the industrious, I will first invoke them, not the Muses, as Homer and Ennius, but the twelve Dii Consentes;—not those, whose gilt images stand about the Forum, six males and as many females; but those twelve Deities which preside over Agriculture. In the first place, Jupiter and Tellus, who promote all the branches of Agriculture in heaven and on earth; they are therefore called the great parents, Jupiter the father, Tellus the mother. In the second place, I will invoke the Sun and Moon, whose seasons are observed, when certain things are sown and laid up. In the third place, Ceres and Bacchus, because corn and wine are necessary for our sustenance. In the fourth place, Robigus and Flora, who being propitious, the blight does not destroy our corn and trees, and they flourish in their season; therefore public holidays called Robigalia were instituted to Robigus; games called Floralia to Flora. I also adore Minerva and Venus; of whom one has the care of the olive-yard, the other is patroness of the garden; to whom were instituted the feasts called Vinalia. I likewise offer my entreaties to Lympha and Good Fortune; because Agriculture is drought and misery without water; without success and good

good fortune it is frustration. These Gods being invoked, I will relate those conversations, which we had lately concerning Agriculture, from which you will be able to judge what you are to do; and such things as are not comprehended in them, I will tell you in what writers, Greek and those of our own country, you may find them.

There are more than fifty authors, who have written promiscuously on this subject. These are they, whom you will have it in your power to consult, when you wish for information: Hieron of Sicily; and Attalus Philometer; among the philosophers, Democritus the natural philosopher, Xenophon of the school of Socrates; Aristotle and Theophrastus the Peripatetics, Archytas the Pythagorean, Amphilochus the Athenian, Anaxipolis the Thasian, Apollodorus of Lemnos, Aristophanes of Malos, Antigonus Cymæus, Agathocles the Chian, Apollonius Pergamenus, Aristander the Athenian, Bacchius Milesius, Bion Soleus, Chæresteus and Chærebas the Athenians, Diodorus Prienæus, Dion of Colophon, Diophanes Nicensis, Epigenes Rhodius, Evagon the Thasian, the two Euphranii, one an Athenian, the other of Amphipolis; Hegesius Maronites, the two Menandri, one of Priene, the other of Heraclea; Nicesius Maronites, Python the Rhodian. Concerning others, with whose birth-place I am not acquainted, these are; Androtion, Æschriion, Aristomenes,

Aristomenes, Athenagoras, Crates, Dades, Dionysius, Euphyton, Euphorion, Eubolus, Lysimachus, Mnaseas, Menestratus, Pleuthiphanes, Persis, Theophilus. All these, whom I have mentioned, wrote in prose. Some likewise wrote on this subject in verse, as Hesiod of Ascra, Menecrates of Ephesus. Mago the Carthaginian passed over these authors in the Punic language, in his twenty-eight books on different topics, which Cassius Dionysius translated in twenty books, and which he sent to Sextilius the prætor in the Greek tongue; in which volumes he added many things from the Greek books of them whom I have mentioned; and he took eight books from those of Mago. Diophanes reduced these to six books in Bithynia, and sent them to King Dejotarus.

I will endeavour to explain this subject in three books: in one I will treat of Agriculture; in the second of Cattle; in the third of the Villa department; passing by those things which I think do not belong to Agriculture. I will then first shew what ought to be distinguished from it. I will then speak of these things, following the natural divisions. They will be from three sources; from what I observed in cultivating my own farms, from what I read, and from what I heard from men of experience.

II. In the holidays, in the sowing season, I came into the temple of Tellus, being invited by the ^aÆditimus, as we learned to say from our ancestors; as we are corrected by the polite in modern times, by the Ædituus. There I met with C. Fundanius, my father-in-law, and C. Agrius, a Roman knight of the school of Socrates, and P. Agrafius the ^b Publican, looking on a map of Italy painted on the wall. What are you doing here? I say: have the holidays in the sowing season brought you hither at your leisure, as they used to bring our fathers and grandfathers? The same reason, the invitation of the Æditimus, says Agrius, brought us, as it did you, I believe: therefore, as it thus happens, you must stay with us, until he returns; for, being sent for by the Ædile, who has the superintendance of this temple, he is not returned, and he has left us to expect him. Are you desirous then that we should think of the old proverb till he comes, “The Roman conquers while he sits ^c? ” Certainly, says Agrius; and thinking at the same time that the delay at the gate is said to be an obstacle to the journey, he proceeds to the benches, and we follow him. When we had sat ourselves

^a The person who looked after the temple.

^b Farmer of the customs.

^c Qui sedendo et cunctando bellum gerebat. Liv. 22, 24.

It was said of Fabius Cunctator.

down, Agrasius says, Have you, who have travelled over many countries, seen any better cultivated than Italy ? I, says Agrius, believe there is none in so perfect a state of cultivation. When the earth was divided into two parts by Eratosthenes, toward the south and the north, and without doubt because the northern is more healthy than the southern part, and that which is most healthy is the most fertile, we must pronounce that Italy was better adapted for cultivation than Asia ; secondly, because this part is more temperate than the interior ; for the winters are there almost perpetual : nor is it to be wondered at, because there are countries between the Northern Circle and the Pole, where the sun is not seen during six months ; therefore they say there is no sailing in the ocean in that part on account of the frost.

Fundanius. Do you think that any thing can spring up there, or when come up, that it is capable of being kept alive ? For true is that saying of Pacuvius, If the sun or night were perpetual, all the fruits of the earth would perish from heat or cold. I, in this situation, where the night and day return and depart with moderation, could not live in the summer, if I did not keep off the heat at noon-day : how can any thing be sown, or increase, or come to perfection, in a situation, where the day or night is six months long ? On
the

the other hand, what necessary of life does not only grow, but does it not also thrive in Italy? What corn shall I compare with that of Campania, what wheat with that of Apulia, what wine with the Falernian, what oil with that of Venafrum? Is not Italy so well planted that it looks like an orchard? Is Phrygia, which Homer celebrates for its vineyards, better stocked with vines than Italy? or is Argos more fertile? In what country does one acre produce fifteen ^d culei of wine? which some parts of Italy do. Does not M. Cato write this? The ground has a certain appellation, which is given to the people on this side of Ariminum, beyond Picenum; in that ground ten culei of wine are made from every acre. Does not the country about Faventia, where the vines are called tricenariæ, make a return of thirty amphoræ from an acre? He at the same time looks at me, and says, Certainly; L. Martius, the Prefect, said that his vines yielded this quantity on his farm at Faventia.

The Italians seem to have considered two things as essential in farming: whether the profit might be adequate to their expence and labour, and whether the situation was healthy or not? If either of these is not attainable, and any one

^d A culeus was a measure, which held forty urns.

wishes to farm, he is insane,^e and is to be put under the custody of his relations; for no one of a sound mind ought to wish to incur expences in Agriculture, if he sees that there can be no recompence; or if there is a probability of a recompence, if he sees that destruction is likely to ensue from pestilence. But I think they are coming, who may be able to demonstrate these things more clearly; for I see that C. Licinius Stolo and Cn. Tremellius Scrofa are coming; one, whose ancestors obtained the law for a certain proportion of land; for the law of Stolo is that, which precludes a Roman citizen from having more than a certain number of acres; and who, on account of his industry, confirmed the name of Stolo; because no useless^f sucker could be found on his farm; for he dug up what came under this denomination. When C. Licinius, of the same family, was tribune, three hundred and sixty-five years after the regal government, he first brought the people to receive the Agrarian law for seven acres. I see another colleague coming, who divided the fields of Campania, Cn. Tremellius Scrofa, a man adorned with every

^e Atque ad agnatos et gentiles est deducendus. Agnati were relations by the father's side; Gentiles were relations by the father and mother's side.

^f In Latin, Stolo.

virtue,

virtue, who is esteemed to be very skilful in Agriculture. Am I not right? for his farms are a more pleasant sight to many, on account of their good tillage, than the edifices of others that are highly finished; as they come to see his farms, not that they may behold the paintings of Lucullus, but his granaries; I say, this man's stores, at the upper end of the Via Sacra, where they sell fruit.

Stolo says, Are we come after supper? I do not see the person who invited us. Be not dismayed, says Agrius: for not only the egg was removed, which puts an end to the contest of the charioteers at the Circensian games; but we did not see ^gthat, which is usually the first thing at the feasts of Ceres. Until the *Æditimus* comes, inform us whether Agriculture affords greater utility or pleasure; for they say that the inexperienced in this science now come to you; they formerly went to Stolo.

Scrofa says, We must first of all distinguish whether such things as are sown in the field only belong to culture, or other things, as flocks and herds; for I perceive that the writers on Agriculture in Punic, and in Greek and Latin, have taken a wider range than they ought. I, says Stolo, do not think that they are to be too closely

^g Egg.

imitated, and that some have done better, who have confined the subject in less compass; having excluded such things as do not belong to it; wherefore, feeding of cattle, which is coupled by most persons with Agriculture, seems to belong more properly to the Herdsman than to the Agriculturist: they therefore, who preside over each department, are distinguished by different names; for one is called the husbandman, the other the master of the flock. The husbandman is appointed for tilling the ground, and the produce is conveyed to the villa by him, and it is ^h carried out by him when it is sold; whence the country people call him by this name, in allusion to this circumstance.

Feeding of cattle, says Fundanius, is certainly one thing, and Agriculture is another; but there is an affinity between them: and as the right-handed and left-handed flute are different, but at the same time there is a similarity between them, because they perform parts of the same music. You may indeed add, that a Shepherd's life is one thing, and the Agriculturist's another, on the authority of the very learned Dicæarchus, who has informed us what kind of life the Greeks led from the beginning; and he teaches us that in early times, when men led a

^h Varro seems to think that *villa*, from which *vilius* is derived, and *vii*, came originally from *vebo*.

pastoral life, they neither knew how to plough, to plant, nor to prune trees; that Agriculture was invented at a later period; and he carries on the comparison between the pastoral life and the left-handed flute.

Agrius says, You not only separate the flock from the master, but from the servants, whom the master appoints to feed it; and you also pass over the laws of Husbandry, in which we write, Let not the husbandman feed any thing of the goat kind in a plantation of young trees,ⁱ which astronomy has honoured with a place in the heavens.

Fundanius says, There is a distinction in this instance respecting a certain species of cattle, Agrius; for some are inimical to culture, and they are poison to it, as goats, which I have mentioned; for they destroy all new plantations, by browsing on them; vineyards and oliveyards among the foremost. It is instituted therefore for different reasons, that a victim of the goat kind may be brought to the altar of one god, while it may not be sacrificed on that of another; when, from the same principle of abhorrence, the one would be unwilling, the other would be willing, to see the animal expiring. It is thus that he-goats were sacrificed to Father Bacchus,

ⁱ Quas etiam astrologia in cœlum recepit. Because Amalthea fed Jupiter in his infancy with goat's milk.

patron of the vine, that they might make expiation with their lives ; on the other hand, they sacrificed nothing of the goat kind to Minerva, on account of the olive, because they say it became sterl if the beast hurt it ; for its saliva is poison to that fruit.

Licinius. On this account it was not driven to the citadel at Athens, except once to a sacrifice, in case of necessity, lest the olive-tree, which is said to have sprung up there first, should be touched by the goat. No cattle, I say, peculiarly belong to Agriculture, except such as are able to assist to bring the ground to a better state of cultivation, as they that are yoked to plough.

Agrafius says, If this is the case, how is cattle to be separated from the field ? as herds of cattle supply us with manure, which is of infinite advantage. On this ground, says Agrius, we may say that ^k birds are a branch of Agriculture, if we settle that we have them for that purpose ; but a case may arise, that cattle may be kept in a ground, and be of no advantage ; from which circumstance we cannot draw the same conclusion ; for then other different things will be to be taken in : for example, if you have weavers and other artificers settled on your farm. Let us then distinguish feeding of cattle from culture,

^k Because the faeces of birds were good for manure.

says

says Scrofa, and any thing else, if any person wishes it. Shall I follow the books of the Sæfernæ, the father and son, and conclude that potteries (for that trade must be followed) belong to it more than silver mines, or mines of other metals, which without doubt are in some grounds? But neither quarries, nor sand-pits, nor potteries belong to Agriculture, although they may be in a ground, and productive of gain. In the same way of reasoning, if there happens to be a ground by the road side, and there is a convenient place for building an inn, which might turn to good account, this, notwithstanding, has no connection with Agriculture; for if any profit arises to the master from the soil, it should not be reckoned as arising from culture, unless it is produced from what is sown or planted. Stolo says, You bear no good will to such writers; and, for the sake of arguing, you mention the potteries, when you pass over some things, which are evidently connected with Agriculture. When Scrofa smiled, because he was not unacquainted with the books, and he looked down, and Agrius thought that he only was acquainted with them, and he asked Stolo to go on. He prescribes how bugs are to be destroyed by means of ¹a species of cucumber, steeped in water, or with bullock's gall,

¹ *Cucumis anguinus.* The snake cucumber.

mixt with vinegar. Fundanius looks at Scrofa, and says, It is true, for he has mentioned this in his treatise on Agriculture. He says, As much so, by Hercules, as the prescription for making a person bald, by the application of water in which a frog had been boiled. I will mention what is more to the purpose, and it is in that book, which may not be inapplicable to Fundanius's health, for his feet are apt to ache, and to make him contract his brows. Go on, I beg, says Fundanius; for I infinitely prefer to hear of a remedy for my feet to a dissertation on planting. Stolo smiling says, I will relate it in his own words: When a person's feet begin to be in pain, he that recollects this may cure them:

‘ O Earth, withhold this pain!
Let health with me remain.

He orders this to be sung seven and twenty times: the patient is to touch the ground, to spit, and to sing the charm fasting. You will find many other instances of the marvellous in the books of the Safernæ, which have but little connection with Agriculture, and which are on that account to be exploded. As if such things are not to be found in other writers. Are there not in the book

^m Terra pestem teneto, salus hic maneto. This is a specimen of the charms of the ancient Romans. There is a very long one in P. Cato.

of the celebrated Cato, which is published concerning Agriculture, many things of the same kind as these—how you are to make ^a cakes, and in what manner you are to salt gammons of bacon? You do not mention that prescription, says Agrius, if one wishes to indulge in eating and drinking at an entertainment, that he must eat some leaves of the brassica steeped in vinegar.

III. Therefore, as we have distinguished the things which were to be kept separate from Agriculture, says Agrasius, we must say something on the subject, whether it is a science, and what it teaches us in farming; or an art, or any thing else, and what its aim is. When Stolo had looked at Scrofa, You, says he, who are the first in years, and in honour and knowledge, ought to speak. He, with a degree of confidence, says, It is not only an ^bart, but a necessary and a great one; and it is a science, which teaches what is to be planted and done in every ground, and what land yields the greatest profit.

IV. The elements of Agriculture are the same as, Ennius says, those of the world are; water, earth,

^a The placenta and libum.

^b Agriculture may be called an art, quatenus vi ingenii exercetur; and the inferior branches of it may come under the denomination of science, because they are inter facultates serviles.

air,

air, the sun. For these things are to be understood before you sow your seed, which is the origin of vegetation.

Agriculturists ought to aim at two things, utility and pleasure. Utility pursues what is profitable, pleasure that which is agreeable. Those things, which render a ground more beautiful in appearance by culture, generally make it not only more profitable, as when vineyards and oliveyards are planted in regular order; but they likewise render it more saleable, and add to the value of the farm; for every one wishes to purchase what has a good appearance, of the same value, at a higher price than he would a farm in a neglected state. But that farm which is healthiest is the most profitable, because the advantage is certain: on the contrary, that which is in a pestilential situation, calamity, although in a fertile soil, does not suffer the husbandman to enjoy the fruit of his labour. For when we run this risk, the profit is not only uncertain, but the life of the cultivator is so likewise. Where there is not salubrity, cultivation is much the same as the turn of a die with regard to the life of the master and his family. But this misfortune gives way to science; for salubrity, which comes from the air and the soil, is not in our power, but in the power of nature; but, at the same time, much depends on us; because we are able to render those things

things lighter by attention, which are in themselves afflictive. For if a farm is unhealthy, on account of the soil, or water, or ill favour which it sends forth; or if a place is too hot, from the nature of the climate; or if an unwholesome wind blows; these faults may be corrected by the knowledge and at the expence of the master. And there is an essential difference in regard to the situation of a villa, what aspect the portico and the doors and windows have. Did not Hippocrates the physician save, not only one spot, but many towns, in a great pestilence, by his superior sagacity? But why should I mention this testimony? Did not our Varro, when his army and fleet were at Corcyra, and when all the houses were filled with dead bodies and funereal preparations, having made new windows toward the north, and having removed the infected, and having changed the door-way, and by other instances of attention of this kind, bring back his associates and family in safety?

V. But as I have mentioned something concerning the principles of Agriculture, it remains that I should examine into how many parts it is divided. They seem to me innumerable, says Agrius, when I read the different books of Theophrastus concerning plants and natural history. These books, says Stolo, are not so well calculated

lated for farmers, as for persons who are educated in the schools of the philosophers. But I do not say that they do not contain some things that are useful, and some things that are common: but do you explain to us the different parts of Agriculture.

The principal parts of Agriculture are four, says Scrofa; the first of which is knowledge of the state of the farm, of the soil, and its constituent parts; the second is to know what things are necessary to cultivate the farm; the third is to know what things are to be done to bring it to tillage; the fourth, in what season it is proper every thing should be done on the farm. Each of these parts is subdivided into two others at least. The first comprises such things as belong to the soil, and to the villa and outhouses: the second part comprises such things as are moveable, and which ought to be on a farm, ^P as labourers, by whom it is to be cultivated, and instruments of husbandry: the third part includes what preparations are necessary for every thing, and how every thing is to be done: the fourth part relates to the seasons, which are to be determined by the

^P The labourer is here classed with the instruments of husbandry, as in P. Cato. The condition of a slave seems to have been not less miserable under the Roman republic than under the feudal system; because his master had the absolute disposal of his life.

annual course of the sun, and the monthly revolution of the moon. I will first say something concerning the first four divisions; I will then be more particular concerning the other eight.

VI. We must therefore examine these four points concerning a farm: what the form of it is; what kind of land; what quantity; how it is fenced. There are two kinds of the first of these, one which nature bestows, the other what culture gives. With respect to the first, one ground is naturally good, another is bad; with respect to the latter, one farm is well cropped, another is ill managed. I will first speak of that kind which nature bestows. As there are three kinds of land, the champaign, the hilly, and the mountainous, and one may see a fourth kind from these three in many places, from a combination of circumstances; from which simple sources there is no doubt but one mode of culture is more adapted to low than high situations, because they are more warm than those that are high: it is the same with respect to situations that are hilly, because they are more genial than such as are very low or very high. These things are more apparent in extensive countries; for where the grounds are so, there the heat has great power; and thus the situations in Apulia are hotter and more unhealthy; and where they are mountainous, as in Vesuvius,

Vesuvius, they are more pleasant and more healthy. Persons who live in low situations labour under inconvenience more in the summer; those in high situations suffer more in winter. In the spring season, things are sown earlier in champaign than in higher situations; and they come to perfection sooner in these than in the former; and things are sown later in high than in low grounds, and they come to perfection later. Some things grow better and stronger in mountainous situations, on account of the cold, as firs and pines; some in warmer situations, as poplars and willows; some thrive better in high grounds, as the Arbutus and the Oak; some in low places, as Almonds, and the fig-trees called Mariscæ. In low hills there is greater affinity between them and the champaign ground, than there is between them and such as is mountainous: in high hills it is the reverse.

On account of these three distinctions respecting situation, there are certain discriminations in relation to sowing and planting; for champaign grounds are esteemed best adapted for corn, hills for vineyards, mountains for woodlands. Champaign grounds are best for winter residence, because the meadows there are not divested of herbage, and there is an advantage respecting the management of trees. Mountainous situations are more convenient for summer residence,

fidence, as there is no deficiency of grafts, which is dry in champaign grounds, and the propagation of trees is more favoured, because the air is cooler there. That champaign situation is more eligible, which has a regular descent on one side, than^q that which is perfectly level; because this, when the water cannot find its way out, generally becomes marshy, the more so, if it is uneven, because ponds are formed there. These three distinctions require different modes of culture.

VII. Stolo. In regard to what is connected with the situation of a farm, Cato seems to say, not improperly, in his book, that the best ground is that, which is situated at the foot of a mountain, and which has a southern aspect. Scrofa adds: I say this concerning culture; we ought to follow what is more eligible in regard to appearance, that it may turn to better account; as they do, who have plantations for vineyards, if they are made in a quincunx, on account of regularity and proportionable distance. Our ancestors from an equal quantity of land, ill planted, produced less, and more paltry wine and grain; whereas when things are placed as they

^q Quam is qui ad libellam æquus. According to the Latin, than that which is level to a line.

ought, they occupy less room, and they do not obstruct the beneficial effects of the sun, and of the moon and air. One may form an idea of this from this circumstance : nuts, when they are whole, which you might comprise in one modius, because nature confines the kernels in their proper places, when they are broken, can hardly be held in a measure of a modius and a half. The trees, that are planted in a regular order, receive benefit from the sun and moon duly on all sides; whence there is a greater crop of grapes and olives, and they are ripened more speedily : and there are two other advantages; they produce more Must and Oil, and of greater value.

The second thing to be considered now follows respecting the quality of the soil, which may be said to be good or otherwise. It is of importance to know what may be set in it, and what will thrive ; for the same things cannot be well raised in the same ground ; for one field is calculated for the vine, another for corn, another for something else. It is said there is a Plane-tree in Crete, which does not shed its leaves in the winter ; and Theophrastus says there is one in Cyprus. There is an oak of this kind at Sybaris, in sight of the town. They say that the fig-trees and vines do not shed their leaves at Elephantine. There are many trees that bear twice, as vines near the sea at Smyrna : there is

an

an apple tree of this kind in the country near Consentia. The same author mentions what productions there are in places that are wild ; and things, that are more estimable, in places that are cultivated. There are some things, that cannot live but in a moist place, or in water, and discriminately, as in lakes, as reeds in the country about Reate ; other things grow in rivers, as Alder trees in Epirus ; other things in the sea, as Theophrastus writes, as certain Palms and Squills. When I led my army in Transalpine Gaul, I went into some countries, where neither vines nor olives nor apples grew, where they manured their grounds with white fossil chalk, where they had neither fossil nor sea salt, but they used ¹what was made of burnt wood instead of it. Stolo says, Cato in his book says, that one ground is better than another in his scale of nine divisions, in the first of which is comprised the vineyard for good and plenty of wine ; in the second is a well-watered garden ; in the third are the willow plantations ; in the fourth the olive yards ; in the fifth the meadow ground ; in the sixth the corn ground ; in the seventh the underwood ; in the eighth the ²arbustum ; in the ninth the wood

¹ Carbonibus falsis pro eo uterentur. Literally, they used salt charcoal instead of it.

² A ground planted with elms or other trees for vines to rest upon. See Columella, lib. v. cap. 6.

for Mafts. Scrofa says, I know that he wrote these things; but all are not agreed on this mode of arrangement; for some, and I among the rest, give the preeminence to good meadows, on which account the ancients called them by a 'particular name. Cæsar Vopiscus *Ædilicius*, when he pleaded before the Censors, said that the grounds of Rosea were the "garden of Italy, in which a pole being left would not be visible the day after, on account of the growth of the herbage.

VIII. Some think that vineyards eat up the profit. It is proper to specify what kind of vineyard it is, for there are many sorts; for some are trailed on the ground, without props, as in Spain; others rise high, and rest on rafters, as most of them in Italy, which have names appropriated to them; those, on which the vine stands perpendicular, are called Pedamenta; those, on which it stands in a transverse position, are called Juga. There are commonly four kinds of the latter of these, the pole, the reed, bands, trees. The pole is used in Falernus, the reed in Arpinum, bands in the country about Brundufium, trees in the country about Milan. There are two ways of

* Parata.

^c The seat is the Latin expression.

training a vine, one is when it is done in a straight direction, as in the country about Canusium; the other is, when the tree is expanded, as it is common in Italy. When you have a stock of these, the vineyard is not so expensive; if you have them from a neighbouring villa, it is not very costly. The first kind that I mentioned is supplied from the willow grounds, the second from the reed plantations, the third from the osier beds, the fourth is raised in plantations for the vineyard, where the vines are trained, as the inhabitants of Milan do, on poplars, or, as the inhabitants of Canusium do, on fig trees.

The pole is also of four kinds: one kind is strong, which is usually brought to the vineyard from the oak and juniper, which is called Ridica; another sort is the stake, the harder the more durable, which, when it has been buried in the ground, is turned up in a decayed state, and becomes a part of the surface; the third is supplied from the reed plantation: they let down some of these in earthen tubes, which are open at the bottom, that the adventitious moisture may have access; the fourth is the native pole, when the vines are trained from one tree to another; ^{*}some call this by one name, some by another. The height of a vine ought to be the same as that of

* Traduces quidam rumpos appellant.

a man. The distances between the poles ought to be so contrived, that the oxen may have room to plough between them. That vineyard is least expensive, which produces good wine without frames. There are two kinds of these; one, where a ground produces grapes in recesses, as in many places in Asia, which is common to foxes and to human creatures; (but if the place is infested with mice, the vintage is more scanty, unless you set traps, as they do in Pandataria;) the other kind is, where the vine is raised from the ground, when the grape appears. When the grape begins to grow, small forks of the length of two feet are set under the vine, that the vintage may not fail, and, when the vintage is over, let it be secured with a string, or a band, which the ancients called a Cestus. When the master takes his leave of the vintager, he lays the forks under cover during the winter, that he may have the use of them another season: the people of Reate follow this method. It is of great import to know the quality of land, which is so various: for where it is naturally moist, there the vine is to be raised higher, because wine does not want water, but sun, in its infancy, and while the fruit is growing. I believe the vine originally crept on trees in the vineyard.

IX. I say, it is proper to know the quality of
land,

land, and what it is calculated to produce. It is said to be of three kinds, common, proper, mixt. It comes under the appellation of what we call common, when we say the earth, and the land of Italy, or any other: in this are comprised stone, sand, and other things of this kind. It is also properly called earth, without any other additional word or epithet. It is likewise said to be mixt earth, fit for tillage, as clay, or stone brash, or other sorts; and in this there are as many sorts as in that, which is denominated common, on account of the constituent parts; for there are many of them of various efficacy and power, among which are stone, marble, rubble, sand, potter's clay, red earth, pulverized earth, chalk, gravel, ^yburnt earth: this last is so burnt by the sun, that it scorches whatever is set in it. When earth is mixt with any of these things, it is then said to be chalky or gravelly; and so it is, when it is mixt with any thing else; and as there are varieties, in the same proportion are the kinds, and some are more minutely distinguished. Land is at least divided into three sorts in each class, because some is very stony, another moderately so, another almost genuine. Thus it is with regard to the other kinds, as there are three sorts of mixt earth. These three sorts

^y Carbunculus.

comprise three more, because some are more moist, some are more dry, some in a middle state. These discriminations have a wonderful connexion with the crop: on this account men of skill sow spelt in a moist situation in preference to wheat; they, on the contrary, sow barley in a dry place in preference to spelt: they sow both in moderate ground. There are more subtle discriminations of these kinds, as in sandy land; for it is proper to know whether the sand is white or red, because that which is inclined to white is not favourable to the growth of plants, that which is red is, on the other hand, apposite to it. The great discriminations of land are three, and it concerns us to know whether it is poor, or rich, or in a middle state. Rich land is more fit for culture; the contrary is the case in relation to poor land. In Pupinia you neither see well grown trees, nor fruitful vines, nor good straw, nor the Marisca fig tree; and other trees and the meadows are dry and mossy. In rich ground, as in Etruria, you may see fertile corn land in perpetual tillage, and well-grown trees, without the appearance of moss. In moderate land, as in the country about Tibur, which is neither poor nor hungry, there is a greater probability of a crop of every thing, than if the soil inclined to that, which is below mediocrity. Stolo says, Diophanes of Bithynia describes what

land

land is fit for culture, and what is not so; and the symptoms may be observed from things that grow on it, or from itself, if it is white or black, if it is light and friable, when it is dug, and neither cineritious nor immoderately dense; from the things that grow on it wild, if they are strong and productive. But proceed to the following subject relating to mensuration.

X. There are different ways of measuring land. In the remoter parts of Spain they measure by Juga, in Campania by Versus, among us about Rome and in Latium by Acres. They call that a Jugum, which a yoke of oxen may be able to plough in a day. They say that a Versus is a hundred feet square. An Acre consists of two square Actus. The square Actus, which is a hundred and twenty feet square, has an appropriate name in the Latin tongue. The least part of an acre is said to be a Scruple, that is ten feet square. On this principle surveyors sometimes say there is a twelfth part, or a half, or some other definite quantity, in a lot, when they have cast up the acre, which consists of two hundred and eighty eight scruples, according to the division of the As before the Punic war. The two acres, which were said to be divided by Romulus, and which devolved to the heir, were called Hæredium. These were afterward called

Cen-

Centuriæ. A Centuria is a square measure consisting of a determinate number of feet. Four of these measures made up each man's allotment, in the division of land among the people.

XI. Many have fallen into an error by not considering the measure of their farm, because some build their villa less than the measure required; others build it larger; when both are contrary to economy and profit: for we build great houses at a considerable expence, and we keep them up at a greater. When they are less than the farm requires, the produce is usually wasted. Licinius. There is no doubt but the cellar is to be made more spacious, where the vineyards are more extensive; as the granaries are to be built, if the corn ground is so. We must build the villa so that it may have water within the precincts; if not, as near as possible, first, that which springs there, secondly, that which flows in without intermission. If there is no spring water, cisterns are to be made under the eaves, and ponds in the open air, that men may use them in one situation, and cattle in the other.

XII. You must endeavour to place your villa at the bottom of a mountain, that is woody, where there may be extensive pastures, with the front towards the winds, which are most salubrious.

brious. That, which is placed toward the rising of the sun at the equinox, is very convenient; for it has some shade in the summer, and it has some benefit from the sun in winter. If you should be compelled to build near a river, you must take care that you do not fix your villa in such a situation, as may be immoderately cold in winter, and unhealthy in the summer. You must likewise be attentive to know, if there are marshy situations near; for, as they become dry, certain animalcules breed, which the eye cannot discern, and they get into the body, and propagate obstinate diseases. Fundanius says, What shall I do, if a farm of this kind falls to me by inheritance, that contagion may not affect me? I can give an answer to that question, says Agrius: sell it for as much money as you can, or, if you cannot, leave it. But Scrofa says, You must take care that your villa may not front those parts from which unwholesome winds usually blow; and do not build it in a hollow valley, but in an elevated situation, that, if any unhealthy air is blown there, it may be the more easily dispelled. Besides, a situation, on which the sun shines all day, is more salubrious; for if any animalcules breed and are brought there, they are either blown away, or they soon perish from drought. Sudden storms and torrents are pernicious to them, who have their habitation in low and hollow situations,

and

and unforeseen bands of pillagers, for they can the more easily harass them. High situations are safer from both these inconveniences.

XIII. In building your villa you must make the ox stalls so that they may be warm in winter. The produce, as wine and oil, must be laid up in cellars, in a level situation, as well as the wine and oil vessels. What is dry, as beans and hay, are to be laid up in proper repositories. You must provide a place for the family, where they may refresh themselves, if fatigued with work, or incommoded by cold or heat. The steward's room must be very near the gate, and he must know who comes in and who goes out in the night, and what he carries with him. This will be the more necessary, if there is no Porter. You must see that the kitchen be conveniently built, because some things are done there, in the winter, before it is light : victuals are dressed and eaten there. You must likewise make buildings sufficiently large in the court for waggons and all other instruments, to which a moist atmosphere is inimical ; for if these are in the yard in the open air, they not only are liable to be stolen, but they have nothing to defend them from the injury of the tempest. Two courts are convenient, where there is a large farm, one, which may have a pond for rain water, of considerable

mag-

magnitude; for the oxen brought from ploughing drink and are refreshed here, as well as geese and pigs, when they return from feeding. There must be a pond in the exteriour court, where lupines may be soaked, and other things, which are more fit for use, when macerated. The exteriour court is often covered with straw and chaff; trodden by the feet of the cattle, it becomes useful, when carried out on the farm. You must have two dunghils near the villa, or one divided into two parts; for one must be carried fresh from the villa, the other must be carried on the ground when it is old: that which is brought in fresh is not so good; when it has stood some time, it becomes better. That dung-hill is more valuable, the sides and top of which are defended from the sun with underwood and leaves: for the sun must not draw out the nutritious juices, which the ground stands in need of; wherefore men of skill cause water to flow in for that reason, for the juices are then retained. Some persons place necessary conveniences for the family on them. You must raise a building, under which you may house all the produce of the harvest, which some call Nubilarium. You must make it near the threshing-floor, where you are to thresh your corn, of a size proportionable to that of the farm, open toward the threshing floor, that you may easily get

get your corn there, and, if it begins to be cloudy, that you may again speedily throw it back. You must have windows on that side, which is most exposed to the wind.

Fundanias says, a Farm is certainly more valuable on account of its buildings, if you direct this point to the simplicity of the ancients, more than to the luxury of the moderns: for they built in just proportion to their produce; the latter build to gratify their insuperable ambition; therefore their common villa was of greater value than the residence of the master, which is now the most costly. A villa was then extolled, if it had a good homely kitchen, some common closets, a wine and oil cellar adapted to the farm, and having a regular descent to the vat, for, where the new wine was laid, the jars often burst by the fermentation of the must, as in Spain, and as the casks do in Italy. They also provided other things of this kind in the villa, such as it required. They now strive that they may have a fine villa, very spacious and very highly finished; and they vie with those of Metellus and Lucullus, built at the public expence: these therefore labour that their summer ^z eating rooms may have a cool eastern aspect, that their winter rooms may front the western sun; whereas the

^z Tricliniaria; rooms where the Triclinia were laid.

ancients

ancients were only solicitous what aspect the windows of the wine or oil cellar had, since the fruit of the vine requires a cooler air for the casks, the oil cellar, a warmer temperature. You must also see, if there is a hill, where the villa may be placed, unless there is some impediment.

XIV. I will now say something in relation to fences, which are to protect the farm, or a part of it. There are four kinds of these; one, the natural fence; the second, the common hedge; the third, the military fence; the fourth is the wall. Each of these has many sorts. First, the natural fence, which is usually planted with young sets or thorns, that have good roots, dreads not the burning torch of the wanton traveller. The second is made of dead wood: it is made with poles set at no great distance, and with underwood properly woven; or with wide perforated stakes, two or three long poles being let into the perforated parts; or it is made with trunks of trees driven into the ground, and afterwards secured. The third is the military fence, a ditch and a rampart; but the ditch so contrived, that it may hold all the rain that falls; or it may have a descent, that the water may get out at the bottom: that is a good rampart, which has a ditch on one side of it, or so high,
that

that it may not be easy to get over it. This kind of fence is usually made near public roads and rivers. In the ^aVia Salaria, and in the country about Crustumium, you may see ramparts and ditches made in some places, that the rivers may not become detrimental to the grounds. Some make ramparts without a ditch, and they call them mounds, as in the country about Reate. The fourth and last is the mason's fence, called Maceria: there are generally four sorts of this; that which is made of stone, as in the country about Tusculum; that which is made of burnt brick, as in Gaul; that which is made of unburnt brick, as in the country of the Sabines; that which is made of earth and stones together, as in Spain and in the country about Tarentum.

XV. The boundaries of a farm likewise are more secure, if there should be no fences, by planting trees, that families may not quarrel with their neighbours, and that the limits may not want the decision of a judge. Some plant pines, as Uxor has done in the country of the Sabines; others plant cypresses, as I have done in Vesuvius; others elms, as many do in the country about Crustumium; which when there is an opportunity of doing in champaign ground, no

^a Salters' Way.

tree

tree is to be more encouraged, because it is very profitable, for it keeps up the bank, and it ^b produces some baskets of grapes, and it supplies the sheep and oxen with its leaves, and it affords wood for dead hedges, and for firing and for the oven. Scrofa. These four things, which I mentioned, are then deserving of the attention of the farmer: the state of the farm, the nature of the soil, the measure of the ground, keeping up the boundaries.

XVI. There remains another part, which is independent of the farm, which has at the same time, on account of its affinity, a connexion with it. It is divided in the same manner. Whether the neighbourhood is unsafe, whether there is an opportunity for carrying away the produce and for getting in such things as may be necessary; thirdly, whether there are roads or canals for conveyance, and whether they are in good condition; fourthly, whether there is any thing on the confines which may be advantageous or disadvantageous to the farm. Under these four heads, it first concerns us to know, if the country is safe or not; for it is not right to cultivate many tracts of country on account of the depredations of the neighbours, such as some of the provinces

^b For it was a standard, on which the vine was trained.

in Sardinia, and those on the borders of Lusitania in Spain. Those neighbourhoods, which have the convenience of selling such things as are produced there, and of getting things that are necessary on a farm, are likewise advantageous; for many persons have farms to which corn, or wine, or something is to be conveyed: on the contrary, there are many, who have something to carry away. It is also right to have gardens on a large scale near a city, and to raise beds of violets, and plantations of roses, and many other things, which a city takes in, when it is not worth while to raise such things in a distant farm, where there is no opportunity of disposing of them. If there are likewise towns and neighbourhoods, or estates and farms in a rich country, where you may buy things that are necessary at a reasonable rate, and where one can dispose of things that are superfluous, as poles, or stakes, or reed, the farm is the more profitable, than if things are to be conveyed from a great distance, or, if you were to raise them yourself. Farmers have an opportunity of hiring ^cdoctors, fullers, artificers in their neighbourhood yearly, which is more eligible than if they kept them in the villa; as the death of one artificer sometimes

^c They agreed with them for their services, but did not keep them in the villa.

takes

takes away the profit of the farm. The rich usually make these a part of their domestic economy. If towns or villages are at a great distance from a farm, let them procure artificers, whom they may keep in the villa, as well as other necessary workmen, that the family may not leave their work on the farm and keep holiday, rather than render the ground more productive by their labour. The book of the Safernæ orders that none should go away from the farm except the steward and the butler, and one whom the steward fixes on: if any one does go contrary to this rule, let him not go with impunity: if he goes away, let the blame be on the steward. This was a proper regulation, that none might get out without the steward's leave, nor the steward without the master's leave longer than one day, and not oftener than the business of the farm required. In the third place, the convenience of carriage makes a farm more valuable, if there are roads, where waggons may travel with facility; or if there are rivers near, which are navigable, by means of which we know things are carried from, and conveyed to, many farms. Fourthly, it imports us to know in what manner our neighbour cultivates his ground on the confines of the farm: for if he has an oak plantation, you cannot with propriety plant the olive near it, because it has a natural aversion from it; so that

the tree is not only less prolific, but it also flies from it, and inclines toward its own foil, as a vine generally does, when planted near garden herbs. Walnuts, as well as oaks, that are large and numerous on the confines, render the borders of a farm steril.

XVII. I have spoken in relation to the four parts, which are immediately connected with the soil, and concerning the other four, which belong to tillage, but which are independent of the farm. I will now relate by what means ground is cultivated, which some divide into two parts, as men, and things by which men are aided, without which there could be no tillage. ^d Some divide these into three parts, under which are comprehended slaves, oxen, waggons. All ground is cultivated by slaves, freemen, or both; by freemen, when they themselves cultivate it, as most of the poor do with their offspring; or by persons for hire, when they perform work of some consequence, as the vintage and the hay harvest, ^e and these are what we call

^d Alii in tres partes instrumenti genus, vocale, et semivocale, et mutum &c. I did not translate this literally. The divisions allude to the division of the alphabet by the rhetoricians.

^e Ilique quos obæratos nostri vocitarunt &c. They were called obærati by our countrymen.

slaves of a peculiar denomination, and there are many of them in Asia, and Egypt, and Illyricum, to this day ; concerning whom I say this, that it is better to cultivate unhealthy situations by means of hirelings than by slaves, and to do rustic work of greater moment in healthy situations, as in laying up the fruits of the vintage and of the harvest. Concerning the qualifications of these, Cassius says this, that workmen are to be procured who may be able to bear fatigue, not less than twenty two years old, and capable of agricultural labour ; that this may be guessed from what they are commanded to do in other things, and from their habits, what they were used to do for their former master. Slaves must not be timid nor petulant. They who preside must have some degree of learning and education, they must be frugal, older than the workmen, whom I mentioned ; for they are more attentive to the directions of these than they are to those of younger men. Besides, it must be most eligible that they should preside, who are experienced in agriculture ; for they ought not only to give orders, but to work, that they may imitate ¹ him, and that they may consider that he

¹ This transition from the plural to the singular is according to the original.

presides over them with reason, because he is superior in knowledge and experience: nor is he to be suffered to be so imperious as to use coercion with stripes rather than words, if this can be done. Nor are many to be procured of the same country, for domestic animosities very often arise from this source. You must encourage them, who preside, by rewarding them, and you must endeavour to let them have some privilege, and maid servants wedded to them, by whom they may have a family; for by these means they become more steady and more attached to the farm. On account of these connexions the Epidotric families are so distinguished and attached. To give the persons, who preside, some degree of pleasure, you must hold them in some estimation; and you must consult with some of the superior workmen concerning the work that is to be done: when you behave thus, they think that they are less despicable, and that they are held in some degree of esteem by their master. They become more eager for work by liberal treatment, by giving them victuals, or a large garment, or by granting them some recreation or favour, as the privilege of feeding something on the farm, or some such thing. In relation to them, who are commanded to do work of greater drudgery, or who are punished, let somebody restore

restore their good will and affection to their master by affording them the benefit of consolation.

XVIII. In relation to the family, Cato has two points in view; a certain proportion of ground, and the kind of plantation, describing olive yards and vineyards, as two examples, in which he gives orders in what manner an olive yard of two hundred and forty acres must be stocked: for he says that these things are to be procured; thirteen servants, a steward, a house-keeper, five workmen; three herdsmen, one ashherd, one swineherd, one shepherd. He describes another plan for a hundred acres of vineyard, where he says these things must be procured; fifteen servants, a steward, a housekeeper, ten labourers, a herdsmen, an ashherd, a swineherd. Saserna writes, that one man is sufficient for eight acres, and that he ought to dig them in forty five days, although he might be able to dig an acre in four days; but he left thirteen days for the benefit of health, on account of bad weather, for recreation and indulgence. Lici-nius. Neither of these has left us models sufficiently perspicuous. For if Cato wished to have an eye to proportion, as he ought, we might add or diminish, as a farm might be greater or less: he ought to mention the steward and the house-

keeper separately from the rest of the family : for if you cultivate less than two hundred and forty acres of olive yard, you cannot have less than one steward ; and if you have ground thrice as extensive, or more, you are not on that account to have two or three stewards. Day labourers and herdsmen are to be diminished or added in proportion as the farms are less or greater, if the ground is also alike ; but if it is dissimilar, so that all of it may not be capable of being ploughed, as, if it is craggy and abounds with hills, fewer oxen and herdsmen are necessary. I pass over that proportion of two hundred and forty acres, which is neither uniform nor moderate : for in a centuria of two hundred acres, and in relation to the two hundred and forty acres, I do not understand in what manner I am to take a ^ssixth part according to his doctrine, and set the steward and housekeeper aside, from the other eleven servants. What he says in relation to a hundred acres of vineyard, that fifteen servants are necessary ; if any one has a centuria, half of which is a vineyard and half of it an olive plantation, it follows that he should have two stewards and two housekeepers, which is ridiculous. The proportion of servants is to be

^s The proportion cannot be adjusted without admitting a fraction.

generally considered in a different way of reasoning, and Saferna is to be more approved in this who says that an acre is sufficient to employ one labourer during four days. But if this was sufficient on Saferna's farm in Gaul, it may not be exactly the same thing in a mountainous country in a different situation. You will therefore know very easily what number of servants your family is to consist of, and what instruments you are to provide, if you consider three things with attention. In what kind of country the farm is, and what its extent, and by how many men the farms there are cultivated, and with what addition or diminution of labourers you may have yours better or worse tilled. Nature has given us two ways, by which we may improve in tillage; which are, experience and imitation. The ancient farmers established most things by experiment; their descendants, a great deal by imitating them. We ought to do both; to imitate others, and to try to do some things by experiment; ^bnot following chance, but something rational; so that, if we dig deeper or more shallow than others, we may know the consequence; as they did in weeding a second and third time, and

^b Sequentes non aleam, sed rationem aliquam. Not following a die, but some degree of reason.

they

they who transferred the grafting of the fig from the spring to the summer season.

XIX. Concerning the other division of instruments, Saferna writes that two yoke of oxen are sufficient for two hundred acres of arable land. Cato writes that three oxen are sufficient in olive grounds of two hundred and forty acres : so that Saferna may be near the truth, that a yoke is necessary to a hundred acres, if Cato allows an ox to eighty. But I think that neither of these is adapted to every kind of ground, and that both of them are suited to some land ; for some land is more easy or more difficult to work than other. The oxen must have great strength to break the ground, and the shares often leave the ⁱshare beams broken in the soil. We must therefore follow three regulations on every farm, while we are novices; the method of the former master, and that of the neighbourhood, and some experiments. When he adds, there must be three asses to carry manure, one ass for the mill, a yoke of oxen, a yoke of asses to a hundred acres. In this division, you must add from the herd those cattle only which are for cultivating the soil, and they are to be few, that the servants, who

ⁱ Eura.

are used to look after them, may be able to be the more assiduous. In this number not only they, who have meadows, take care to have sheep in preference to swine; but they also, who have no meadow grounds, ought to have them for the sake of manure.

XX. In relation to all quadrupeds the first thing is probation. You must examine which oxen are fit, that are bought for the plough; which you must procure before they are broke, not less than three years old, nor more than four: let them be perfectly strong, and equal, lest the stronger kill the weaker at work: let their horns be large, and black rather than otherwise; let the forehead be wide, the nose flat, the breast broad, the hip bones large. You must not buy them from champaign situations into such as are rough and mountainous; and if it so happens, you must avoid the practice. When any person has bought young bullocks, if he confines their necks in forks fixt for that purpose, and gives them food, they will be gentle in a few days and fit to tame. You must then work them so that they may be accustomed to the practice gradually, and let them join a young bullock with one that is experienced; for he is more easily tamed by imitating him: and let him be first exercised in a level place, and without the plough;

plough ; then on light ground, and on sand or a softer soil. Those which are to be trained for carriage, must be used at first to draw empty waggons, and, if you can, through a village or a town. Much noise, and variety of objects soon render them fit for use by habit. You must not make the steer, which you have placed on the right side, remain pertinaciously in that situation ; for if he is changed to the left side, he is relieved from his fatigue. Where the land is light, as in Campania, they do not use heavy oxen, but cows and asses for ploughing, and they are more easily trained for a light plough, and for the mill, and for carrying things on the farm, if there are any ; for which purpose some use asses, others cows and mules, according to their stock of provender ; for an ass is more easily maintained than a cow ; but this is more profitable.. Farmers must have an eye to this, what kind of farm theirs may be, for in a craggy and difficult soil you must procure beasts of strength, and such as are most profitable, as they do the same work.

XXI. You are to have dogs to be rather a credit to you, and a few sharp ones rather than a great number ; which you may accustom to watch in the night, and to sleep in confinement in the day time. In relation to tame quadrupeds and cattle ; if there are meadows on the farm,
and

and the master has no cattle, he must endeavour that he may feed and house another person's cattle on his farm for hire.

XXII. In relation to other instruments, among which are baskets and casks and other things, this is to be observed; such things as grow on the farm and may be made on it, let nothing of this kind be purchased, among which are things made of osier and rustic materials, as baskets, frails, threshing instruments, mallets, rakes; as well as things that are made of hemp, flax, bulrush, the palm, the ^kscirpus, as ropes, halters, mats. Such things as cannot be procured on the farm, if they are bought with a view to utility rather than for the sake of appearance, will not lessen the profit by their expence, especially if they are purchased where they may be procured good in the neighbourhood, and at a cheap rate. The variety and number of instruments are proportioned to the extent of the farm, for more things are necessary, if the boundaries are extensive. The extent of a farm being therefore proposed, Stolo says, Cato writes to this effect; the person who would cultivate two hundred and forty acres of olive ground, must stock it thus;

* A species of rush, of which mats were made. Pliny, lib. xvi. c. 37.

he must have five sets of oil vessels, which he enumerates very carefully; as pots, pitchers, a ¹ Nasiterna and other things, all of brass; of wood and iron, three large waggons, six ploughs with shares, four panniers for carrying manure, and other things; things made of iron, as eight iron forks, as many weeding hooks, half that number of spades, and other things. He made another schedule of instruments for a farm with a vineyard, in which he says, if it consists of a hundred acres, the occupier must have three sets of press vessels made, casks with covers, of eight hundred culei, twenty vessels for grapes, twenty for corn, and other things of this kind, which are not so numerous as in the other instance: but I believe he mentioned the number of culei, that he might not be compelled to sell his wine every year; for old wine is more valuable than that which is new, and the same wine is dearer one season than another. He also says many things in relation to the variety and kind and number of iron instruments, as pruning hooks, spades, harrows: thus he mentions other things, some of which comprise many sorts, as hooks, for the same author says that six are necessary in the vineyard, five for the osier beds, five for underwood, three

¹ A large vessel, so called from its three handles of peculiar form.

for lopping trees, and ten for common use. This was what he said. But Scrofa says, that the master must have a list of all the instruments and of all the furniture in the city and in the country; and the steward ought to see that all things are put in their proper places in the villa in the country. Such things as cannot be under lock, must be as much as may be in sight; the more so, if they are seldom in use, as things belonging to the vineyard, baskets and other things; for the things that are daily seen, are not so easily stolen.

XXIII. Agrafius says, as we have expatiated on the two first subjects of the four divisions, concerning the farm and the instruments with which it is cultivated, I expect to hear something in relation to the third part. Scrofa says, as I look on that to be the produce of a farm, which being sown grows useful for some purpose; two things are to be considered, what, and in what situation, it is proper to sow and plant: for some situations are calculated for hay, some for corn, others for the vine, others for the olive. It is the same with respect to provender, under which are comprised basil, mongcorn, vetches, ^mmedica, cytisus, lupines. Nor are all things sown

^m Lucerne.

and

and planted in rich land with equal propriety; and it is the same with respect to a poor soil. For those things, which do not want moisture, are better raised in a thin soil, as cytisus and pulse, the chiche pea excepted; for this is also pulse, as well as other things, that are taken up out of the ground and not cut, "which, because they are thus gathered, acquire this appellation: things of greater import are more properly raised in rich lands, as garden herbs, wheat, filigo, flax. Some things are to be likewise planted not so much for immediate profit as for the succeeding year, because being cut and left on the land they meliorate it: on this account lupines, when they are not in pod, and bean halm, if it is not come to that degree of perfection, that the beans may be gathered, if a ground is poor, are usually ploughed in for manure. Nor are those things to be less discriminated in planting, which are profitable and agreeable, such as come under the appellation of orchards and gardens. Things also, which have no immediate connexion with man's sustenance and gratification and pleasure, are not disunited from utility in the field. A fit situation is to be chosen where you may make a willow and a reed plantation, and to raise things which require a moist place; on the other hand you

^a Quæ, quod ita leguntur, legumina dicta.

may

may plant beans, where corn is raised. There are other things, which require dry situations : and you may plant other things in shady places, as the *Corruda*, which *Asparagus* also likes : and in sunny situations you may plant violets and make gardens, because they are cherished by the sun.. Other things are to be propagated in another place; that you may have materials to make frails, baskets, hurdles. In another situation you may plant and cultivate an underwood; in another, a wood where you may have game. In another place you may raise hemp, flax, bulrush, broom, of which you may make Gear for the oxen, lines, halters, ropes. Some places are adapted to the propagation of other things : and in fresh nurseries that are just planted, and in plantations of small trees, the first seasons, before the roots can proceed far, some raise garden herbs, others something else ; and when the trees come to some strength, they do not continue the practice, that they may not disturb the roots.

Stolo. In relation to these things Cato does not write amiss concerning sowing and planting; if a ground is deep and promising, and without trees, it must be for raising corn : if a ground is subject to fogs, turnips, radish, millet, panic are to be raised there.

^o *Asparagus palustris*:

XXIV. Plant in a deep and warm soil the olive for preserving, the greater *Radius*, the *Orchites*, the *Pausea*, the *Sergiana*, the *Colminia*, the *Albiccr*: propagate that sort most that is best suited to the soil. In raising an olive plantation, they say that no ground is fit for the purpose, unless it lies open to the west and to the sun. A ground that is cold and poor must be reserved for the *Licinian* olive. If you set this in a deep or warm soil, the oil will be bad, and the tree will die in bearing, and the red moss will be troublesome to it. They call that a draught of oil, which is made at one time, and they have another name for the quantity that is thus made, which some say consists of [¶]a hundred and sixty modii; some say, it is only a hundred and twenty: and they have a proportionable number of capacious vessels for making the oil. Cato says, that elms and poplars are to be planted round a farm, that there may be leaves for the sheep and oxen, and that there may be a supply of timber: but this is not necessary on all farms; and where it is necessary, chiefly on account of the leaves: they are set to the best advantage on the north side, because they do not obstruct the sun. He adds, from the same writer, if a situation is moist, there the poplar and a reed plantation are

[¶] In some copies it is a hundred and forty.

to be raised: turn the ground first with a spade, plant the eyes three feet from each other. The *Corruda* is also to be set there; for the same culture is adapted to both of them. The Greek willow must be set about the reed plantation, that it may grow for tying the vine.

XXV. In what ground a vineyard may be planted, you must be thus directed. The place that produces the best wine, and that has an aspect toward the sun, must be planted with the less *Aminean*, and with the double *Eugneus*, and the less pale red grape. A place that is deeper, or apt to be clouded, must be set with the greater *Aminean*, or with the Murgantine, or Apician, or Lucanian vine. In relation to other vines, and especially the inferior sorts, they may be set in every kind of ground.

XXVI. They carefully observe in every vineyard, that the vine may be covered by the pole on the north side; and if they set living cypresses for poles, they set them in alternate rows, and they do not plant the vines too near them, because they are not congenial. Agrius says to Fundanius, I am afraid lest the *Æditimus* come before he proceeds to the fourth division; for I am expecting the subject relating to the vintage.

Do not be afraid, says Scrofa, and hasten to the subject.

XXVII. As time is of two kinds, one annual, which the sun defines by its course; the other monthly, which the moon determines by its motion: I will first speak in relation to the sun. Its annual course is commonly divided into four parts, of three months each; and the same is divided more minutely into eight parts, of a month and a half each. Into four parts, when it is divided into spring, summer, autumn, and winter. There are some standing rules for the spring: you must break up the ground; let the things, that are sprung up in it, be eradicated, before the seed falls from them; and the ground being warmed by the sun, you must render it better adapted to receive the showers, and more easy to be wrought. You must not plough it less than twice; to do this thrice is better. Harvest work must be done in the summer. The vintage must be done in dry weather in the autumn, and the woods must be attended to, and the trees must be trimmed near the ground. Let the roots be dug for the early showers, that no suckers may grow from them. The trees must be pruned in the winter, when the bark is free from frost and wet and ice.

XXVIII.

XXVIII. The first day of the spring is in Aquarius, of the summer in Taurus, of autumn in Leo, of the winter in Scorpio. When the twenty-third day of these signs is the first of the four seasons, it follows that the spring has ninety-one days, the summer has ninety-four, the autumn ninety-one, the winter eighty-nine days; which being reduced to our common days, the first day of the spring season is the seventh of the ides of February, the beginning of the summer is the fourth of the ides of May, of autumn the fourth of the ides of August, the beginning of the winter season the seventh of the ides of November. The seasons being more minutely distinguished into eight parts, we are to observe that they are thus divided: from Favonius to the vernal equinox, from that period to the rising of the Vergiliæ, from that day to the summer solstice, from that time to the appearance of the Dog-star, then to the autumnal equinox, from that period to the setting of the Vergiliæ, from that to the winter solstice, and from the winter solstice to Favonius.

XXIX. These things must be done in the first interval, between Favonius and the vernal equinox. All kinds of nurseries are to be planted, to be pruned, the roots of the vines are to be laid open, the suckers are to be cut off, the mea-

dow grounds are to be dressed, willows are to be planted, corn grounds must be dressed. What is ploughed and sown is called *seges*; what is ploughed, but not sown, is called *arvum*; what has been sown, but not ploughed a second time, is called *nivalis*. When they first plough a ground, they term this breaking it up; when they do it a second time, they say they cross-plough it, for in the first ploughing the ground is only raised up; when they plough the third time, the seed being sown, they are said to complete the work; that is, when they apply boards to the share, and cover the grain that is sown in the ridges, and form furrows, by which the water may run off. Some who have corn grounds, as in Apulia, usually harrow their ground, if there are large clods left on the ridges. That impression which the plough makes with the share is called a furrow. The ground that is raised between the two furrows is called a ridge, because it gives the corn an appearance of elevation.
 ¶ When they offered the entrails to the Gods, they said they waved them.

XXX. In the second interval, between the

[¶] The meaning of this passage turns on the word *porricio*, which was equally applicable to the ridge of corn and to the waving of the entrails to the Gods.

vernal equinox and the 'rising of the Vergiliæ, these things are to be done. The corn grounds must be weeded, the oxen must break up the ground, willows are to be cut, the meadows must be reserved for hay. Such things as ought to be done in the last interval, and are not finished, are to be done before the trees bud and blossom. If they, which are wont to shed their leaves, begin to flourish, they are not fit to be planted. The olive must be planted and pruned.

XXXI. In the third interval, between the rising of the Vergiliæ and the summer solstice, these things ought to be done. You are to dig your new vineyards, or to plough them, and then to harrow them; that is, to break the clods; this is what they call harrowing. The vines must have the young shoots taken off, but by a man of skill, for this requires greater knowledge than pruning; and it is not to be done in the arbus-tum, but in the vineyard. To do this, you are to leave one, two, sometimes three shoots, which grow on a spray, them which are most healthy, and to take off the rest, lest, the young shoots being left, the wood may not be able to supply them with nourishment. When a vine first comes up in a vineyard, it is cut off, that it may spring

* The seventh of May,

up with a stronger stem, and that it may have more strength to produce young shoots; for a weak stem is steril from natural infirmity, and it cannot produce the shoot which is called *flagellum*, nor that which has the name of *palma*, which produces the grape. The ^sfirst of these terms alludes to the power which the wind has over it; the latter, because it bears the fruit, was probably at first called ^t*parilema*; it was afterward changed into *palma*. The tendril is the twisted part, bearing some resemblance to a lock of curled hair, which, that it may hold the vine, ^ucreeps to get it into its situation, from which circumstance it is called *capreolus*.

All kind of provender must be cut; basil, mongcorn, vetches, lastly hay. The Latin name of ^sbasil is derived from the Greek, on account of its speedy growth. This may also be called by this name on account of its prompt efficacy on cattle, and it is for that reason given to purge them, and it is cut green before it runs to seed. On the other hand, when barley and vetches and

^s Varro thinks it was first called *flabellum*.

^t From *pario*.

^u Seipit ad locum capiendum, ex quo a capiendo capreolus dictus. There was a shoot called *capra*, and the tendril *capreolus*, probably from the superior powers of the goat in climbing, and not from *capiō*, as the learned Author supposed.

^x Ocimum, from *ωξυς*.

pulse to be cut green for provender, are sown mixt, they are called *farrago*, either because they are cut, or because they were first sown in corn ground: horses and other beasts of burden are purged and fed with these in the spring. The *vetch* has its name from its binders, because it has tendrils like the vine, with which it creeps up the stalks of lupines, or any thing else, and it usually binds them, that it may maintain its situation. If you have water meadows, water them as soon as you have taken up the hay. Give the fruit-trees that are grafted water every day, ^afor they owe their name to their want of moisture.

XXXII. In the fourth interval, between the summer solstice and the Dog-days, most persons are engaged in the harvest of that kind of corn, which, they say, is fifteen days in its integument on the stalk, as many in blossom, and as many days in coming to maturity. You must finish ploughing, which is best done when the weather is hot. When you have broken up the ground, you must repeat the ploughing, that the clods

^y Quod ferro cæsa, farrago dicta, aut nisi quod primum in farracia segete seri cæptum.

^z Vicia a vinciendo.

^a Quod indigent potu, poma dicta, &c.

may be pulverised; for they are only separated from the soil by the first ploughing. You must sow vetches, lentils, chiche peas, the small vetch, and other things,^b which some call by one name, some by another, both signifying that they are not cut, but gathered with the hand. You must plough old vineyards a second time, new ones a third time, if the clods are not properly broken.

XXXIII. In the fifth interval, between the Dog-days and the autumnal equinox, the stubble must be cut and laid up, the ground must be ploughed a second time, leaves must be gathered, water meadows are to be cut a second time.

XXXIV. In the sixth interval, they say that you must begin to sow and plant from the autumnal equinox for ninety-one days; you are not to sow after the winter solstice, unless necessity compels you; because there is this difference, that the things sown before the winter solstice come up on the seventh day; the things sown after the solstice hardly come out of the ground on the fortieth day; and you must not begin

^b Quæ alii legumina, alii, ut Gallicani, legaria appellant; which some call *legumina*, others, as the Gallicani, call them *legaria*. The Gallicani lived in Campania, near a place now called Cascano.

before

before the equinox, for, if the season turns out unfavourable, the seeds usually rot. Beans are best planted at the ^csetting of the Vergiliæ. You are to gather grapes and get in the vintage between the autumnal equinox and the setting of the Vergiliæ. You must then begin to prune the vine, and to propagate it, and to plant fruit-trees. These things are better done in the spring in some countries, where the cold sets in early.

XXXV. In the seventh interval, between the setting of the Vergiliæ and the winter solstice, these things must be done. You are to plant the lily and the crocus, which now take root: the root of the rose-tree is cut of the length of a palm, and planted; this is afterward transplanted, when it has taken deeper root. It is not of much use to raise plantations of violets on a farm, for it is necessary to heap up mould, which watering and rain wash away, and they impoverish the ground. ^dSerpyllum may be transplanted from

^c The twenty-eighth of October.

^d Serpyllum was the wild thyme, so called because it crept on the ground: bees were fond of it. *Ab Favonio usque ad Arcturi exortum serpyllum e seminario transferri.* This passage is printed thus in all my copies, which is evidently incorrect. It ought to be, *Ab Arcturi exortu usque ad Favonium serpyllum, &c.* Columella says, Arcturus rose on the fifth of September.

the nursery from the rising of Arcturus to Favonius. You must dig new drains, and scour the old ones: you are to prune the vineyard and arbustum, as long as you do not do this fifteen days before and after the winter solstice. The elm is planted at that season.

XXXVI. In the eighth interval, between the winter solstice and Favonius, these things must be done. The corn grounds must be drained; but if they are dry, and the soil is mellow, they must be harrowed. You must prune the vineyard and the arbustum. When you cannot work in the field, things that may be done in the house must be done in the winter season before day-light. You must have the things I mentioned set down in writing, and placed in the villa, as the steward ought to know.

XXXVII. The lunar days are to be observed, which are divided into two parts; for the new moon increases till it is full, and it afterward decreases toward the new moon, till it comes to the interlunium, on which day the moon is said to be at its last and first period, which the Athenians call the old and new period. Some things are to be done in the fields, while the moon is increasing rather than decreasing; some things are to the contrary, as the cutting of corn and underwood,

derwood. I observe those things, says Agrafius, not only in shearing my sheep, but in cutting my hair, as a custom received from my father; for I might become bald, if I did not do this on the wane of the moon. Agrius says, How is lunar time divided into four parts, and how is that connected with tillage? Tremellius says, Have you never heard in the country that the moon is called 'Jana on the eighth day, when it is increasing, and when on the wane; and what things must be done when the moon is increas-

^e Apollo, or the Sun, was worshipped by the Romans sometimes under the name of Janus, and he is one of the most ancient deities in their mythology. He borrowed some epithets, which at first belonged to the moon, as Bifrons and Biceps, and he was sometimes called Quadriifrons, in allusion to the division of the heavens to East, West, &c. They sacrificed to him with frankincense, honey, figs, bread-corn, wine, and other things. The Moon was called Jana; and when she was deified, she was called Dea Jana, and then Diana. On the eighth day of its age half of this luminary is visible, the other half invisible, which gave origin to the epithet Bifrons, and which, it is probable, in early times was with singular propriety applied to Jana, but afterward transferred to Janus. The name of Jana has no immediate connexion with the eighth day of the moon's age, nor with any word of oriental extraction; but it is of Greek origin, from which Janus first took his name, which the Romans afterward bestowed on the moon, and it was called Jana, Dea Jana, or Diana. There are two well known Christian names, which are evidently derived from this idolatrous origin of Roman mythology.

ing,

ing, and that some things are done better after this eighth day than before ; and that it would be proper to do some things on the wane of the moon, in the last stage of its visibility ? I have already spoken in relation to the four divisions concerning culture. Stolo says, there is another division of time connected with the sun and moon, which consists of six parts ; as every kind of fruit commonly comes to perfection in the fifth stage, and to the cask and modius in the villa ; in the sixth it is taken out for use. In the first place it is to be prepared ; secondly, to be sown or planted ; thirdly, to be cherished ; fourthly, to be gathered ; fifthly, to be laid up ; sixthly, to be taken out for use. In making preparation for some things, trenches are to be made, or the ground is to be well wrought, or furrows are to be formed ; as, when you wish to make an arbustum or a plantation for raising fruit-trees : for other things you must plough or dig, as when you raise corn : for some things the ground is to be turned with the spade, more or less ; for some roots spread less diffusely, as Cypresses ; others more widely, as Plane-trees ; so that Theophrastus writes, there was a Plane at Athens, the roots of which spread to the distance of thirty-three cubits. If you plough for some things, you must repeat it before you sow the ground. If there is any preparation in relation to

to meadows, it is to keep the herd from them, from the season the pear-tree is in blossom. If there are water meadows, let them be seasonably watered.

XXXVIII. You must examine what places are to be manured, and how, and with what kind of compost you may do this to the best advantage, for there are different sorts. Cassius writes, that the fæces of birds are the best, excepting birds that are bred in fens, and aquatics. Among these the excrements of pigeons have the preference, because they are of a very hot nature, and they make the ground ferment. They must be scattered on the soil, as feed; and not put in heaps, as the dung of cattle. I think that what comes from aviaries, in which thrushes and blackbirds are bred, has the pre-eminence; for it is not only useful to the soil, but it has the power of fattening oxen and swine. Persons, who bargain for aviaries, if the seller agrees that the excrements shall remain on the farm, sell them for less money, than if the manure was disposed of with them. Cassius writes that human fæces are the next to those of pigeons; thirdly, those of goats, of sheep, of asses. Horse dung is the least useful on corn land, but it is good on meadow grounds, as well as that of other beasts, that are fed on barley, for it produces plenty of herbage.

You

You must make your dunghill near the villa, that the manure may be carried out with as little trouble as may be. If a piece of oak is fixt in it, they say that a serpent cannot breed there.

XXXIX. The second stage of propagation has an eye to this, at what season every thing is to be planted. For it is of import to what part of the heavens every place has its aspect, and so it is to know at what season every thing grows most favourably: for we see that some things flourish in the spring, others in the summer; and it is the same in relation to the autumn and winter. Some things are planted, and inserted, and come to perfection, sooner or later than others, and most things are to be inserted better in the spring than in autumn: the fig-tree is inserted about the summer solstice; the cherry, in the days of the winter solstice. As there are different modes of propagation, as, when living roots are transplanted from one ground to another, when a troncheon is taken and let down into the soil, when trees are grafted; we must diligently examine, what you are to do in every season and situation.

XL. Seed, which is the principle of vegetation, is of two kinds; one, which is not perceptible to our sences; the other is that, which lies open to our inspection: that is imperceptible, if there

there are seeds in the air, as Anaxagoras says, and if water, which runs in the field, is wont to convey them, as Theophrastus writes. That, which is apparent, is to be carefully examined; for some seeds are so small that they are hardly visible, as those of the cypress; for the cones, which grow on the tree, are not the seed, but it is comprised in them. Nature bestowed the principles of vegetation; the experience of the Husbandman found out the rest. Things originally sprung up without the aid of the cultivator, before they were sown: those that were gathered from them afterward, did not grow, till they were sown. You must first examine your seeds, that they are not become dry with age, or that they are not mixt, or that they are not ^fadulterate. Old seed seems as if it changed its nature in some things: for some say that turnips spring from old cabbage seed, and, on the contrary, that cabbages grow from the seed of the turnip. You must be careful that you do not gather seeds too soon or too late.

Theophrastus writes, that there is one species of propagation, which is practised more properly in spring and autumn, and at the rising of the Dog-star; but it is not the same in all situations

^f Substituted for genuine seeds, according to the meaning of the Latin word *adulterinus*.

and circumstances : in dry and poor ground, and in clay, spring is the fit season, where there is not much moisture ; in good and rich land, autumn is the season, for in that case there is much moisture in the spring. This is commonly confined to thirty days.

There is another mode of planting, when a shoot is taken from a tree, and set in the ground ; you must, however, take care that it is planted in due season, that is, before it begins to bud and blossom ; and what you take from the tree, be cautious you do not injure it ; that the plant may take root more firmly. They set such things as these speedily, before the moisture gets off. In relation to the propagation of olives, you are to see that the cutting is taken from a tender branch, even on all sides : some call this a troncheon, others a cutting ; and they make it about a foot long.

There is another mode, which passes from one tree to another. You must see from what tree the shoot is taken, and at what season, and how it is secured : for the oak does not receive the pear, nor does the apple-tree admit it. ^b Many follow this, who pay much attention to the haruspices, by whom it is said, that as many kinds

^a Tied.

^b When the Romans offered their sacrifices and made their vows,

may be inserted, as the flashes of lightning prescribe. If you insert a good pear on a wild stock, the fruit will not be so well flavoured, as if you grafted it on a stock that was not wild. Whatever tree you graft, if it is of the same kind, as if they are both apple-trees, you must consider the fruit, that the shoot may be of a better sort than the tree on which it is inserted. There is another species of grafting lately practised on trees that are near each other. The person, who inserts thus, brings a small shoot to that tree which he grafts, and he inserts that part, which is adjoining, in a branch that is cut and prepared: the internal shoot is trimmed on both sides with the pruning knife, so that on that side, which is turned toward the sun, it has its bark even with the bark of the tree. He takes care that the top of the shoot, which he inserts, may be fixt perpendicular. When it takes the year after, he cuts it off from the other tree.

XLI. In relation to the season of grafting, these things are to be first considered. Such things, as were at first inserted in the spring, are now grafted at the summer solstice, as the fig, which, as it is not of a dense substance, on that account

vows, they used a language, that was mysterious. It breathes the same spirit in this passage,

follows the warm season. For the same reason, plantations of fig-trees cannot be raised in cold situations. Water is inimical to the fresh grafted fig, for it soon renders the tender shoot putrid; wherefore that, which is inserted in the Dog-days, is thought to be done most seasonably. With respect to things, that are not of so soft a texture, they fix a vessel above them, from which water may gently flow, that the shoot may not become dry before it coalesces, the bark of which must be preserved whole, and the shoot itself trimmed in such a manner, that the pith may not be laid bare: that showers or too much heat may not hurt it, you must cover it with potters' clay, and tie it. They cut off a vine three days before they insert it, that the redundant moisture may flow off before it is inserted; and they cut a place for the insertion a little lowerⁱ, that the adventitious moisture may find its way out. The practice is different in regard to the fig and the pomegranate, and things of a drier nature. In relation to other modes of insertion, you must see that what is inserted has a bud, as in the fig-tree. With respect to the four different modes of propagation, as some things are of flower growth, you must use shoots, as they do in raising plantations of fig-trees: for the seed of the fig is in the fruit, which we eat, which are such small

ⁱ Than the place where the vine was cut off.

grains,

grains, that plants are not easily raised from them: for all small and dry things are of tardy growth; those, that are more soft, are of a more fruitful nature, as the female is more so than the male. It is the same in the vegetative system; therefore the fig, the pomegranate, the vine, are prone to growth on account of their feminine softness: on the contrary, the palm, the cypress, and the olive are of tardy growth. It is proper then to propagate shoots from the fig plantations in preference to the seed. If any one wishes to send these seeds over sea, or to have them from a remote country, they in that case hang the figs on strings; and when they are dry, they wrap them up and send them, where they wish, that they may be sown in nurseries to vegetate. Thus the different kinds of figs, as the Chian, the Chalcidian, the African, and other outlandish kinds, were conveyed to Italy. For the same reason, as the seed of the olive is the kernel, because the plant grows more slowly from it than from a troncheon, on that account we set them in nurseries, as I have mentioned.

XLII. In regard to ^kmedica, you are to observe, first, that you do not sow it in a soil that is too dry or too moist, but temperate. If the

^k Lucerne.

ground is temperate, they say that half a modius of medica is necessary to sow an acre. It is ¹sown in the same manner as provender and corn are sown.

XLIII. Cytisus is sown in well-wrought ground in the same way as cabbage-feed ; it is then removed, and set at the distance of half a foot. Or plants are taken from the cytisus, and set in the ground.

XLIV. Four modii of beans are planted on an acre ; five modii of wheat, six of barley, ten of bread corn are sown on an acre ; but more or less in some places ; for if a ground is rich, more ; if poor, less is sown : you will therefore observe how much it is customary to sow in that part of the country, that you may sow the quantity the country and the kind of land require : as from the same seed there is a return of ten times the quantity in some places, in other places there is a return of fifteen times the quantity, as in Hetruria and in some other situations in Italy. They say that in the country about ^mSybaris there is usually a return of a hundred fold. In some parts of Syria and Africa likewise a hundred modii

¹ It was sown broadcast, according to the Latin.

^m A city of Calabria.

are produced from one. That is also of important difference, whether you sow in fresh ground, or in such as is sown every year, which is called *restibilis*, or in a fallow, which has rested some time.

Agrafius. They say that there are grounds that are tilled every year in Olynthia; but they bear a more plentiful crop the third year.

Licinius. Ground must be left fallow every other year, or you must sow it with a crop of something that is light, which will not exhaust the strength of the soil. Agrius says, We must say something concerning the other part. Licinius says, Things that grow on the soil become prolific with time; when they are full of sap, they produce fruit, or an ear of corn: thus when they are ripe, they restore seed similar to that, from which they are produced. If you gather a flower, or an unripe pear, or any thing else, nothing springs up again in the same place the same year, because the same thing cannot have a period of impregnation twice^{*}; for as women have certain days to the time of their delivery, so trees and the fruits of the earth have immutable laws in the progress of bearing.

XLV. Barley comes out of the ground commonly in seven days, and wheat not much later.

* In the same season.

Pulse spring up generally in four or five days, except the bean, for it comes up later. Millet also and ^oSesama, and other things, come up likewise commonly within a certain number of days, except the part of the country, or the weather, has been the cause of hindering it.

Things, that spring up in the nursery, if the situation is colder than common, which are of a tender nature, must be covered with leaves or straw. If the weather is showery, you must see that the water do not stagnate ; for frost is poison to the tender roots under ground, and to the shoots above it, which do not grow equally in the same season ; for roots thrive more in autumn or winter, because being covered with earth, they are cherished with some degree of warmth. The things above the soil suffer from the cold ; and things that are wild prove this, to which the cultivator has not approached ; for the roots increase before the shoots, which usually grow from them : nor do the roots grow to any great length, except in the season, when the sun has some power. There are two causes that contribute to this, for nature throws out some kinds of roots farther than others, and some kind of soil gives way more easily than another.

^o The French and Italians call this Sesame and Sesamo. The English call it the oily grain, because it produces much oil.

XLVI. There are some wonderful discriminations of nature, for by the change in some leaves the season of the year may be known, as in the olive and poplar, and the willow; for when the leaves of these are turned, it is said that the summer solstice is past. Nor is that less wonderful in the flower, which they call ^PHeliotropium, from the circumstance that it turns toward the sun in the morning, and it follows its course to the west, and always faces it.

XLVII. The shoots, that are set in the nursery, the tops of which are naturally tender, as the olive and the fig tree, are to be covered with two small boards tied on the tops; and the weeds are to be destroyed, and they are to be pulled up, when young; for when they are grown, they are not so easily rid.

The grass in the meadow ground reserved for harvest is not only not to be plucked, but not to be trodden. The cattle is to be driven from the meadow ground, and every beast of burden and human creatures are to keep away; for their tread is perdition to the grass, and it becomes the foundation of a path.

XLVIII. In relation to corn, that is, what grows

^P Tournsole.

on

on the halm. The ear of barley and wheat consists of three parts, the grain, the husk, the beard; and when the ear first springs up, it has a sheath. That is called the grain, which is the internal substance ; the husk is the thin coat, which covers it. The beard projects from the husk like a small needle. The husk is the external covering of the grain, and the beard is the summit of it. The beard and grain are commonly known to all, the husk to few, for I know it is only mentioned in the works of Ennius. The ⁹word seems to be derived from this circumstance, because the grain is separated from the husk ; they also call the external coat of the fig by the same name. The 'beard is so called, because it is the first part of the ear that becomes dry. The ⁵grain has its name from its bearing quality ; for it is sown that it may produce corn, not for the sake of the husk and beard ; as the vine is propagated, not to produce useless shoots, but grapes. The ear, which the vulgar call ¹speca, as they received it from their forefathers, seems so denominated from the hope of a future harvest, for they sow it with the hope that it will grow. That is called

⁹ Gluma a glubendo.

¹ Arista dicta, quod arescit prima.

⁵ Granum a gerendo.

¹ Specam a spe &c.

a defective ear, which has no beard : this is the prominent part of the ear, which, when it first springs, is hardly apparent : the part of the halm, in which it lies concealed, is called the sheath, as that in which a sword is kept. That, which is less than the grain on the upper part of the ear, is called frit ; that, which is at the lowest part of the ear, on the extremity of the halm, and less than the grain, is called urruncum.

XLIX. When he had been silent for some time and no question was asked him, thinking that no particular information was desired; I will say something, says he, concerning taking in the produce, when it is come to maturity. First concerning meadow grounds: when the grass has left off growing, and it is become dry, it ought to be mown, and to be turned till it is perfectly dry; when it is dry, it must be made and carried to the villa; the meadows must then be raked, and the hay must be cumulated; which being done, the ground is to be cut a second time, that is, you must go over it with the scythe, where the mowers passed and left it tuberous with grass, whence, I believe, "the term is taken for this second mowing.

^a The expression is *ficilire pratum*; the verb is a diminutive, well applied to the scantiness of this second mowing.

L. The word *messis* is properly applied to those things which we cut, especially to corn, and it is derived from that source. There are three modes of reaping, one as in Umbria, where they cut the straw with a hook near the soil, and they lay it on the ground in handfuls, as they cut it : when they have cut a considerable quantity, they go over it again, and divide the ear from the straw ; they throw the ears into a basket, and send them to the threshing floor ; they leave the straw in the field, where it is made into mows.

They have another method of reaping, as in Picenum, where they have an incurvated stick, at the extremity of which there is a small iron saw : when this lays hold of a handful of ears, it cuts them, and it leaves the straw standing in the field, that it may be cut afterward.

There is a third mode of reaping, as near Rome and in most places, when they cut the straw in the middle, and lay hold of the upper part with the left hand, from which some might think the word *messis* sprung ; the straw, which is left on the ground, is cut afterward ; the straw, that remains with the ear, is carried in baskets to the threshing floor, in an open situation, from which the *chaff has its name in the Roman tongue. Some think that 'straw was so called, from its

* *Palea*, according to Varro, comes from *palam*.

y Alii stramentum a stando &c. alii ab stratu.

mode of growing; others, because it is strown for the purpose of littering cattle. When the corn is ripe, it must be reaped. An acre may be said to be nearly sufficient for one day's work in an easy place. They ought to carry the reaped ears in baskets to the threshing floor.

LI. The threshing floor must be in an elevated situation, where the wind may have access. It must be made in proportion to the extent of your corn grounds. It is best to make it round and a little prominent in the middle, that, if it rains, the water may not lodge there, and that it may run from the floor as speedily as may be; and the roundness of the figure is favourable to this. It must be laid with dense mould, the greatest part of which is to consist of potters' clay, that it may not crack in hot weather, and that the corn may not lie buried in it, and that it may not retain the water, and form an opening for mice and ants. They on this account usually sprinkle amurca over it, for this is an enemy to weeds and ants, and it is poison to moles. Some, that they may have their threshing floor sufficiently solid, fortify it with stone, or make a pavement on it. Some likewise have a covering over their floors, as among the ² Bagieni, because frequent showers

² In some of my copies this is in *Vagienis*, among the Vagieni, who were a people on the Alps.

rise in their country in the summer. When they are open and the situations warm, sheds must be made, into which the men may retire in the noon-day heat.

LII. The largest and best corn must be set apart on the threshing floor for seed. The grain must be wrought out of the ear on the threshing floor, which is done in some countries by beasts and a tribulus: this is made with a board set with stones or iron, on which a Charioteer or a great weight being placed, it is drawn by beasts that are yoked, that it may work the grains out of the ears: or it is made with boards indented with small wheels, which they call a Pœnic cart: a person fits in it, and drives the beasts, which draw it; as they do in Spain and other places. ^a It is wrought out in some countries by driving cattle over it, until the grain is separated from the ear by their hoofs: this being done, it must be dressed with fans or winnowing instruments, when the wind blows gently, so that the lightest part of it, which is called ^b the chaff, is blown from the threshing floor, and the corn, which is weighty, comes genuine to the basket.

^a There is an allusion to this custom in the New Testament, I Cor. ix. 9.

^b Atque appellatur acus. This last word strictly means the beard.

LIII. The harvest being done, the gleaning must succeed; the stubble must be gathered, or, if the crop is light and labour expensive, it must be fed: for due care is to be taken, that the expence may not exceed the profit in this business.

LIV. When the grape is ripe in the vineyard, you must attend to the vintage; and you are to examine from what kind of grapes, and from what place in the vineyard, you are to begin to gather; for the early ripe grape, and the inferior one, which they call the black grape, ripen early; they are therefore to be gathered first; and the part of the arbuscum and of the vineyard, that is best exposed to the sun, ought to descend from the vine first. The grape is gathered during the vintage not only for making wine, but it is picked for eating. It is therefore brought into the wine market, whence it may be conveyed in casks: it is then picked into a separate basket, whence it may be put into small pots, and thrust into casks full of the refuse of grapes. Another sort is to be preserved in the fish-pond in a pitched amphora; another sort in the granary, or in the larder. The Pedicles and hulls of the grapes, that are trodden, are to be laid under the press, that, if they have any Must left, it may be pressed into the same vat. When it has ceased to flow under
the

the press, some cut the extremities, and press them again ; and when the must is thus pressed, ^c they give it a particular name, and keep it apart, ^d for it has not a good taste. The pressed hulls of the grapes are thrown into casks, and water is put to them : this is called *lora*, because it is thus made, and it is given to the workmen for wine in the winter.

LV. In regard to the olive plantation : The olives, which you can reach with your hands and with ladders, must be gathered rather than shaken from the tree ; for they, that have been beaten down, shrink, and do not give so much oil. Those, that are gathered with the hand, are better gathered with naked fingers than when they are covered with gloves ; for they not only bring down the fruit, but they hurt the bark, and leave the branches naked to the frost. The fruit, which cannot be reached, ought to be struck with a reed rather than with a pole, for a deep wound requires a physician. The person, who thus gathers them, is not to strike against the natural bent of the branches, for the olive thus struck often

^c Circumcisitum appellant. They call it circumcised wine.

^d Quod resipit ferrum. Literally, because it tastes of the iron, that is, of the iron instrument, with which the extremities of the grapes were cut.

brings

brings down a shoot, which being done, the crop of the following year fails; and this is one reason, why they say, that olive plantations do not bear fruit some years, or not an equal quantity.

^c The olive comes to the villa in the same double capacity as the grape; one sort is picked to eat, another to be turned into oil; and that it may lubricate the body not only internally, but likewise externally, it therefore follows its master to the baths and to the gymnastic exercises. The olives, of which oil is made, are usually heaped in store-rooms for a short time, that they may be properly ripe; and each heap is regularly conveyed, by means of jars and oil-vessels, to the prefs, where the olive-mills grind with hard and rough stones. If the olives in the heaps have been too long gathered, they become rotten with heat, and the oil is made fetid. If you cannot make it in time, you must give the olives air. The olive produces two things; the oil, which is known to all; and the amurca, the utility of which many are ignorant of, which they may see flowing from the press to the field, and not only turning the soil black, but rendering it sterl by too abundant a quantity; whereas a moderate

^c Olea ut uva per idem bivium reddit in villam. The olive returns into the villa by the same double path as the grape. The expression is figurative.

degree of it is useful in many things, particularly in agriculture, for it is usually poured round the roots of trees, especially of the olive, and wherever weeds are hurtful.

LVI. Agrius says, I have been fitting and expecting you with the key some time, Stolo, until you bring the produce into the villa. Here am I, says he; open the door. Hay is better laid up under cover than in ricks; and that the provender is sweeter is known from this, because the cattle eats it more willingly, when both are set before them.

LVII. But wheat must be laid up in lofty granaries, to which the wind may have access from the east and from the north; to which let no moist air come from situations that may be near. The walls and floor are to be covered with plaster made of marble; if not, with potters' clay mixt with chaff and amurca, which do not harbour mice and worms, and they make the grain more solid and more firm. Some sprinkle amurca over the wheat, and they allow a quadrantal of it to a certain number of modii. Others sprinkle something else over it, as Chalcidian or Carian chalk, or absinthium, and other things of this kind. Some have granaries under ground, caves, which they call Syri, as in Cappadocia and

Thrace;

Thrace; others have pits, as in Spain, and in the fields of Carthage and of Ostia. They strew the floor of these with chaff, and they take care that the wet and air may not come to the corn, except when it is taken out for use; for where the air does not come, there the weevil does not breed. Wheat thus laid up keeps for fifty years, and millet more than a hundred. Some make lofty granaries above ground in the field, as in the parts of Spain nearest Italy, and in Apulia. Some build them in such a way, that the wind may not only refresh them by windows in the sides of them, but from the ground underneath.

LVIII. Beans and pulse are preserved a long time, when covered with ashes in oil vessels. Cato says, that the less and greater Aminean and the Apician grape are best laid up in pots: the same are with propriety preserved in Sapa and Must. The grapes with hard integuments, the Aminean and ^{the} Scantian, are fittest for drying.

LIX. Concerning apples: the small quince for preserving; the quince, they that are called ^{the} Scantian,

^c The same as the greater Aminean. Pliny, lib. xiv. c. 4.

^s So called from a person of the name of Scantius. Pliny, lib. xv. c. 4.

tiana, ^b Quiriniana, Orbiculata, and such as they formerly called must-apples, but now, honey-apples, are all preserved laid on straw in a dry and cool situation. They, therefore, who build repositories for fruit, take care to have the windows toward the north, for the convenience of air, but not without shutters, that the fruit, when it has lost its moisture, may not be spoiled. They, therefore, make the rooms, and walls, and floors, with marble plaster, that they may be cooler, in which some persons are used to spread the *triclinium* for supper. For as luxury has permitted it to be done in rooms appropriated to paintings, which exhibition is derived from the work of the artist, why may not what nature has bestowed, be used for the same purpose, especially when it is not done, as it has been a practice among some, when they have brought into the country fruit purchased at Rome into a repository to be furnished as a room for conviviality? Some think that apples are properly kept in a repository for fruit; others, on boards, or on work made of marble plaster; others think they are best kept on chaff, or in wool. Pomegranates are kept with their pedicles fixed in a cask, with sand in it. The quince and the small quince are kept in

^b Probably in honour of Quirinus.

penfile frails. Pears, on the contrary, are preserved in Sapa, that which is called the ⁱ Aniciana, and the large pear, called ^k Sementina. The fruit of the service-tree is divided and macerated in the sun as well as pears; and when this fruit is laid by itself in a dry place, it keeps very well. Turnips are kept in mustard seed; walnuts in sand; pomegranates, when gathered ripe, in sand, as I have already said; and when they that are not ripe are on their native shoot, if you lay them in a pot without a bottom, and if you put it in the earth, and set some shoots round the fruit, if the air does not come to it, you may take it up not only whole, but larger than when it hung on the tree.

LX. In relation to the olive: Cato writes that the olives best laid up for eating are the Orchites and Pauseæ, either green in brine, or bruised in oil of lentisk. If the black olives are rubbed with salt for five days, and, when the salt is shaken off, if they are set in the sun for a couple of days, they are usually fit: the same are preserved in *Defrutum*; without salt.

LXI. Skilful farmers lay up their amurca in

ⁱ From the person, who introduced it.

^k Because it kept to the sowing season.

casks, as regularly as they do oil and wine. ¹ When it hath flowed from the pres, it is boiled down; and when cold, it is put in vessels. There are other ways of laying up amurca, as that, when Must is applied to it,

LXII. As no person lays up the fruits of the earth, but that he may produce them, a few things are to be considered in relation to this subject. They produce things that are laid up, that they may be examined, or used, or sold. Things, that are not of the same nature, are to be examined and used at different seasons.

LXIII. The grain, which the weevil begins to eat, must be taken out to be examined. When it is taken out, you must set vessels with water in the sun, that the weevils may betake themselves to them, and be destroyed. They, who have their corn under ground in those things, which are called Syri; as getting into them is attended

¹ *Ejus conditio, cum expressa effluxerit.* Literally, *the laying of it up, when &c.* *Conditio*, a word introduced into most of the modern languages of Europe, primarily referred to what was seasoned, or to what was laid up for keeping. The second syllable of this word points to an ingenious accuracy of the Romans in the construction of the word: it is sometimes long and sometimes short, to shew its relation to the two words *condire* and *condere*.

with danger, when they are first opened, on account of the confined air, you must, therefore, take the corn out some time after you have opened them. The bread-corn, which you have laid up during harvest, and which you may wish to get out for provision, must be taken out in the winter, that it may be ground, and prepared in the ^m *Pistrinum*.

LXIV. When the amurca, which is a watery fluid, is pressed from the olive, and the dregs are put in an earthen vessel, some are used to keep them so during fifteen days; then that which is lightest and on the surface, they convey to other vessels; and they do this at intervals twelve times for the six months ensuing. When they do this the last time, they transfer it most seasonably when the moon is on the wane. They then boil it over a gentle fire, till a third part of it is consumed; then it is drawn for use.

LXV. The Must, that is laid up for wine, is not to be drawn while it ferments, nor when it is become vinous. If you wish to drink it of a good age, which is not done before the expiration of a

^m The *pistrinum* was the place where the Romans in early times pounded their corn. In process of time the word became to signify a mill, turned by slaves, or beasts. It afterwards signified a wind or water mill.

year, then, when it is so old, it is drawn for use. But if it is of that kind of grape, which soon gets sour, it must be used or sold before the vintage. There are kinds of wine, among which are the Falernian, which, the more years they have been kept, are the more estimable, when drawn.

LXVI. If you take out the white olives too soon, which you put up fresh, they are not palatable, on account of their bitter taste ; so are the black olives, unless you first macerate them in salt water, that they may be eatable.

LXVII. The sooner you take and use the walnut, and the fruit of the Palm-tree, and the Sabine fig, the more pleasant they are to the taste ; for the fig becomes of a paler hue, the fruit of the Palm more rotten, and the walnut more dry with age.

LXVIII. Things hung up to dry, as grapes, apples, and the fruit of the service-tree, shew when they must be taken for use, because the colour being changed, and the grapes contracted, if you do not take them for use, they will only be fit to throw away. The fruit of the service-tree laid up quite ripe, must be taken out for use the sooner; but when it is hung up before it is ripe, it is to be taken out the later, because it arrives

at

at that state of maturity, which it could not acquire on the tree.

LXIX. The bread-corn, which you may wish to get ready for provision, must be taken out in the winter, to be prepared in the *Pistrinum*. That, which is for sowing, is to be taken out new, when the ground is ready to receive it. Other things also, which are for sowing, must be taken out in due season. Such things as are to be sold must be examined, and taken out in due time; for some things, which will not keep, you must take and sell before they change; other things, which may be kept, are to be sold, when they yield a good price; for things kept a long time not only pay the interest, but double the profit, if you dispose of them in proper time.

When Stolo was saying this, the freedman of the *Aeditimus* comes to us weeping, and asks our pardon for detaining us, and desires us to come to his patron's funeral the day following. We all get up, and exclaim, What! to a funeral? what funeral? what is the matter? He, weeping, tells us, that he had fallen under the poignard of some person, and he could not distinguish in the crowd, who the person was; but, that he only heard the expression, that he had basely done it. When he had taken his patron home, and had sent for a physician in a hurry; that he had done this

this rather than come to us, it was but justice, that he should be forgiven. Although he could not preserve his life, for he breathed his last soon after, he, however, thought he did what was right. We descend from the temple with sorrow, and complaining of the lot of humanity more than astonished at what was thus done at Rome, we all depart.

M. TERENTIUS VARRO

CONCERNING

AGRICULTURE.

BOOK II.

OUR illustrious ancestors preferred them, who lived in the country, to the inhabitants of cities, and not without reason. For as in the country, they, who live in the villa, are more idle than they, who are employed in the field ; thus they thought them, who lived inactive in a town, more lazy than they, who tilled the ground. They therefore divided the year so, that they might do their business in the city on the ^a ninth day, that they might devote the other days to tillage. While they observed this institution, they gained two points, that they might have their fields very fertile by culture, and they themselves might be more strong and healthy ; and they did not want the gymnasia of the Greeks, which are now so common ; and they do not

^a The market-day among the Romans, called *Nundinæ*.

think

think that they are possessed of a villa, if they do not apply many Greek names to it, as they call particular places belonging to it, the ^b *Proæton*, the *Palæstra*, the *Apodyterion*, the *Peristylon*, *Ornithon*, *Peristerion*, *Oporotheke*. As families have now crept into towns, having taken leave of the scythe and of the plough, and as they choose to be in the theatre and in the circus, rather than in the field and vineyard, we hire a person to bring us corn from Africa and Sardinia, and we lay the produce of the vine in ships from Coos and Chios. Where they, who looked after the flock, taught their progeny the science of cultivation; they who built a city, there their progeny, from motives of avarice, against the laws, turned corn to meadow ground, being ignorant that agriculture and feeding the flock are not the same thing, for the shepherd is different from the ploughman; nor, if the herd is fed in the field, is the herdsman the same as the man that drives the oxen at plough, for the herd does not create a crop, but consumes it: on the other hand, the ox, when tamed, becomes instrumental in raising corn and provender in ploughed land. The skill and knowledge of the cultivator is one thing,

^b The antichamber; *Palæstra*, or place for wrestling; *Apodyterion* was the room where persons undressed before they bathed; *Peristylon* was a colonnade: the other three were, the aviary, the pigeon-house, the repository for fruit.

that

that of the herdsman is another. The cultivator is to see that the things which spring from the ground yield a profit; on the other hand, the herdsman is to make the most of his cattle. But because there is a great affinity between these, and as the master of the soil ought to depasture his crop rather than to sell it, and as compost is most necessary to raise the fruits of the earth, and as cattle is most fit for that purpose; he, who has a farm, ought to have skill both in cultivation and in rearing cattle, and in the villa department; for considerable profit may be taken from this last, from aviaries, and hare-warrens, and fish-ponds. As I have written a book on Agriculture for the use of Fundanias Uxor, I will dedicate this to you, Tyrannus, who are so much pleased with the herd; and you often come to market to purchase, that you may not add to your expences. I shall do this with less difficulty, because I once had great flocks of sheep in Apulia, and I kept many horses in the country about Reate. I will then run over this subject concisely and summarily, and having laid my plan with a retrospection to them who had great herds in Epirus, when I commanded the fleets of Greece in the ^cpiratic war between Delos and Sicily.

^c Plutarch says, that the number of Pirates, who surrendered on this occasion, amounted to 20,000.

I. When

I. When Menates was gone, Cossinius says to me, We will not let you go before you explain to us the three things, which you had begun lately, when we were interrupted. What three things? says Murius; do you mean what you said yesterday concerning the herd? Those things, says he, which you had begun to treat of, the origin, the dignity, and the art of rearing the herd, when we had come to see our friend, who was so much fatigued, if the arrival of the physician had not interrupted us. I will only relate what is recorded in history concerning the two first points, the origin and dignity of the herd. In relation to the third part, the art of rearing it, Scrofa will undertake it, and that I may speak to farmers, who are half Grecians, he is much better qualified for this than I am; for he is the master of your son-in-law, C. Lucilius Hiprius, whose noble herds are among the ^d Brutii: but you shall receive this information from us, on the condition that you, who are Epirots, famous for your herds, will requite us, and communicate what you know: for no person can know every thing. When I had accepted this condition to undertake the first part; not to say any thing of my own cattle in Italy; but all who are in possession of a harp, are not harpers. Since then it must necessarily be,

^d Between Consentia and Rhegium, in the southern part of Italy.

that

that human creatures and cattle have always existed, whether there has been some innate principle of generation in animals, as Thales the Milesian, and Zeno of Cittus, have imagined ; or, on the other hand, if there has existed no such principle, as Pythagoras of Samos, and Aristotle of Stagira believed, it is necessary that human life must have gradually descended from the remotest antiquity to this age, as Dicearchus writes ; and the remotest period was that in which men lived in the state of nature, on such things as the inviolate earth spontaneously produced : from this period they descended to the pastoral life from a savage and wild state, from gathering mast from trees, the fruit of the arbutus, mulberries, and other excellent fruit ; they caught, confined, and tamed animals, for the same essential utility ; among which it is reasonably supposed that the sheep was the first, on account of its utility and its placid nature ; for this is gentle, and best adapted to afford sustenance to man ; for it bestows on him milk and cheese to feed him, its coat and skin to clothe him. They afterward descended from the pastoral life to agriculture, in which they retained many things from the two superior degrees, and they made gradual advances, till they came to the present age. There are in many places some kinds of wild cattle to this day, as sheep in Phrygia, of which there are

many

many flocks ; as there are goats in Samothrace, which are called *Rotæ* in Latin : there are also many of them in Italy about the mountains Fif-cellus and Tetrica. In relation to swine, this is known to every body, unless any body thinks that wild boars do not come within the denomination. There are at this present time many wild oxen in Dardania, and Media, and Thrace. There are wild asses in Phrygia and Lycaonia. There are wild horses in some parts of Spain.

I have mentioned the origin ; I will now say something of the dignity of the herd. Among the ancients, the most illustrious personage was a shepherd, as the Greek and Latin languages and the early poets inform us; who say, that some were rich in lambs, some in sheep, and some in oxen ; and they transmitted to posterity, that they had ^egolden skins on account of their great worth, such as Atreus complains that Thyestes took from him ; and in ^fColchis the Argonauts are said to be descended from royal blood, on account of the ram's fleece in the time of Ætes ; and in Lybia they relate the story of the ^gHesperides, whence the golden apples, that is, in the language of mythology, the goats and sheep, which Her-

^e *Aureas habuisse pelles tradiderunt.*

^f From which place they fetched the golden fleece.

^g The ambiguity of the Greek word *Mηλος*, which signifies an apple as well as a sheep, gave rise to this fable.

culs exported from Africa to Greece, for the Greeks called them by the same appellation in their tongue. Our countrymen formed a word from the same source : but sheep, when they cry,^h seem to begin from another letter, whence they call it bleating, having exchanged a letter, as it is common in many other instances. If cattle was not in great esteem among the ancients, the astronomers would not have called the stars by their names, in describing the heavens, which they did not hesitate to do; but many reckon the twelve signs from them, as from Aries and Taurus, for they set them before Apollo and Hercules, for they follow them, and are called Gemini. Nor did they think it sufficient that the names of the herd should obtain a sixth part among the twelve signs; but they also added Capricorn, that it might make the fourth part in the number. They likewise added to the stars from the flock the goat, the kids, the dogs. Are there not also places alluding to the names of the herd by sea and land ? The Ægean Sea had its name from a goat ; in Syria, there is mount Taurus ; among the Sabines, mount Canther ; the Thracian and the Cimmerian Bosphorus. Are there not many places, which take their names from it, as Ippo-

^h Varro says, the Latin verb *balare* comes from the same Greek origin, the letter *m* being changed into *b*.

nargos? Piso also writes, that¹ Italy has its name from this origin. Who will deny that the Roman people is sprung from shepherds? Who is there that does not know that the shepherd Faustulus educated Romulus and Remus, and that they themselves were shepherds, because they built the city under the auspices of Pales? Does not the ^k fine, that was by ancient custom paid in kind, refer to this? And the oldest coin, that was cast, was marked with the figures of cattle; and when the city was built, a bull and a cow described where the walls and the gate were to be; and the Roman people, when they perform the lustrum, sacrifice a boar, a ram, and a bull, under the appellation of the Suovitaurilia. We have also many of our names from the herd and the flock: from the flock, Porcius, Ovinus, Capri-lius: from the herd, the surnames of Equitius, Taurus, for persons are called Annii Capræ, Statiili Tauri, Pomponii Vituli; and there are many other names derived from the same fountain.

We must speak concerning pastoral knowledge, which Scrofa, to whom this age yields the palm in all country business, will undertake, as he is the best qualified. When all had turned their faces toward him, Scrofa says, The knowledge of

¹ Italia a Vitulis, ut scribit Piso.

^k Mulcta, a mulgendo.

procuring and feeding cattle, is, that as much profit as may be may be taken from it; whence money has its name, for cattle is the foundation of wealth. It has nine different parts; one is concerning the flock, of which there are three kinds, raised from the sheep, the goat, the sow; the other part relates to the herd, in which it is also distinguished by nature into three species, oxen, asses, horses; the third part belongs to the flock; and these are not procured with a view to immediate profit, but for the use of the flock, as mules, dogs, shepherds. Every one of these comprises nine general divisions, four of which are for procuring the flock, the same number for feeding it; there is besides one called common. Thus all the parts are at least¹ eighty-one, and they are really necessary and of no little import. First, that you may have a good herd, you must know of what age you are to get and to have every sort: you therefore buy a young heifer or a cow above ten years of age, into the herd for less money, because the beast begins to breed from two or three years of age, and it ceases after the tenth year; for the first and last age of all cattle is steril. Another part is a due knowledge of the shape of every kind of cattle; for this is

¹ When each of the nine parts was subdivided into other nine parts.

of great importance in regard to profit: thus they purchase an ox with black rather than white horns; a she-goat rather large than small; swine high in stature with small heads. The third part is, from what breed cattle is to be sought; ^m for, on this account, the Arcadian asses in Greece are so distinguished, they of Reate in Italy so much, that an ass sold for sixty thousand sesterces in my memory, and a team sold at Rome for four hundred thousand. The fourth part is how all cattle is to be purchased according to the civil law: for what was another man's property, it is necessary to use some form, that it may be mine: nor is stipulation, or the payment of the money, sufficient for change of proprietor in all cases. In buying you must stipulate immediately, that some cattle are from a sickly, some from a sound breed, others from neither. The other four parts are to be considered, when you have bought them; they relate to feeding, breeding, rearing, health. In regard to feeding, which is the first, there are three things; in what situation, the season, and how you are to feed your cattle; as you are to drive your goats into mountainous and fit places, rather than to grass grounds: it is different in relation to horses; nor are the same

^m Hoc nomine enim asini Arcadici in Græcia nobilitati. It might be improper in modern times to apply this language to creatures of such inferior rank.

situations

situations fit to feed all kinds of cattle in summer and winter : thus flocks of sheep are driven to a great distance from Apulia, to pass the summer at Samnium ; and they promise the farmer of the customs, that they will conform to the Censorian law, if they enter their cattle under him. Mules are driven from the champaign grounds of Rosea in the summer, to the high Gurgurian mountains. You must use your reason, how every sort of cattle is fed to the greatest advantage, not only, that a horse or an ox is satisfied with hay, when swine refuse it and go in quest of mast ; but barley and beans are to be laid before some beasts at times, and lupines are to be given to oxen, and lucerne and cytisus to milch cows. Besides, more provender is allowed rams and bulls thirty days before admission, that they may be strengthened ; it is taken from cows, because they are said to breed better, when they are lean. The second part relates to breeding. I call that breeding, from the time of conception to the period of bringing forth ; for these are the beginning and end of impregnation. We must first examine at what season every sort of cattle must be admitted : for as they think the spring the fit season for swine, from Favonius to the vernal equinox ; so the season for sheep is thought to be, from the ⁿ setting of Arc-

ⁿ The 29th of October.

turus to the ^o setting of Aquila. We must use our reason also, how long the males are to be kept from the females before the time of admission; which herdsmen and shepherds do almost in all cases two months before. Another part relating to breeding, is to observe how long cattle go with young: for a mare goes twelve months, a cow ten, a sheep and a goat five, a sow four months. There is an incredible story current in Spain relating to breeding, that in Lusitania, in that part near the sea, where Lisbon stands, mares are impregnated by the wind at a certain season, as hens breed in this country, the eggs of which they call *Upenemia*. But the colts, that come from these mares, do not live more than three years. We must examine, that the young that are brought forth, whether come to a state of perfection or otherwise, may have clean and soft litter, and that the dam may not tread on them. Those lambs are called *Chordi*, which are lambed after the usual period, and which remained in the ^P *Chorion*; from which circumstance they were thus called. The third part relates to what must be observed in rearing the young; under which are comprehended how many days they are to suck, and at what time, and where: and, if the dam has little milk, the shepherd is to set the

^o The 29th of December.

^P External membrane of the foetus.

offspring under another, whence the lambs were called *Subrumi*, for I believe the teat was called *Ruma* in the language of the ancient Romans. Lambs are not weaned generally till they are four months old, kids when three months, pigs when two months old; which last, when they were prepared for sacrifice, were formerly called *sacres*, to which custom Plautus alludes, when he says, What is the value of these *sacres*? The oxen fattened for the public sacrifices are also the best. The fourth part relates to health, a subject difficult; but at the same time necessary; for cattle that is unhealthy and affected with disease, and when it is not in good condition, often afflicts the herd with great calamity; of which science there are two branches; one, the same as when a human creature is ailing, when medical aid is to be called in; the other a diligent shepherd may cure. There are three parts of this, for we must consider what are the causes of every disease, and what the symptoms of those causes are, and what method of cure ought to be applied to every disease. The causes of diseases commonly are from too much heat or cold, and on account of too much fatigue, or, on the contrary, on account of no exercise; or, if, when you have exercised them, you immediately give them provender or drink without pausing. The symptoms are these, whether they have a fever from heat or from too

much labour, the mouth is open, there is a frequent moist breathing, and the body is hot. When this is the disease, this is the cure. Water is poured over the beast, and he is anointed with oil and warm wine; he is fed, and something is administered to prevent a chill; warm water is given him to drink. If this do not give relief, the beast is bled, generally in the head. There are other causes and symptoms in other diseases, which the master of the herd must have in writing. The ninth part, which I mentioned as common to two parts, concerning number, is left to be discussed: for it is necessary that he, who has cattle, should limit the number of his stock, and know how he is to feed it, lest his ⁹ woodlands may be too confined or too extensive, and lest his profit fail. He must also know how many females he has in the herd, that are fit for breeding, how many rams, how many young ones, how many are to be disposed of as refuse. If there are more than can be reared, you must of course put away some, which will be the means of the others thriving in a superior degree. See, says Atticus, that he may not deceive you, and that the nine divisions may not exceed the number of the flock, and of the herd: for how can the nine parts exist in relation to mules and sheep?

⁹ *Saltus* were open places in woods, where the herd was fed.
herds,

herds, where neither admission nor breeding takes place? I grant that these things may be said concerning dogs; and the number may be also retained in reference to human creatures, because they have women in the villa in the winter, and some have them in their summer habitations; and they think it right, that they may keep the shepherds with the flock, and that they may add to the number of the family by bearing children, and that they may render this branch of farming more profitable. If the number is not correct, as it is not, when we say that a thousand ships went to Troy, or when we talk of the judgment of the centumviri at Rome. Take away, if you will, admission and breeding from mules. Breeding, says Vaccius, that it may be said that a mule has not bred at Rome? To whom I reply, that I might bear my part, that Mago and Dionysius wrote, that a mule and a mare foal in the twelfth month, when they have conceived. Why should not all acknowledge that it may be a prodigy, if a mule has foaled in Italy? Swallows and storks, which propagate their species in Italy, do not breed in all countries. Do you not know that some palms are productive in Syria, and they lose that power in Italy? But Scrofa says, If you wish to make up the number eighty-one without the breeding and rearing of mules, you may supply

ply that deficiency ; because there are two great and extraordinary sources of profit, one of which is shearing, for ¹ they shear or pluck sheep and goats : the other, which is a more copious subject, relates to milk and cheese, which the Greek writers have called by a ² distinct name, and they have written diffusely concerning it.

II. As we have performed our part, and the question concerning the herd is reduced within certain limits ; now give us your opinions on each subject, Epirotics, that we may know what excellent herdsmen come from Pergamis and Maledos. Atticus, who was then T. Pomponius, though Q. Cæcilius now has that surname, says, I believe I shall begin, because they seem to have fixt their eyes on me, and I will speak of the primitive herd. You say, that sheep were first taken by men from the savage flock, and tamed. You must first purchase these from a good breed, neither too old nor too young, because these cannot yield any profit ; but that age, which is followed by hope, is preferable to that, which hath death in its train. In relation to form, a sheep must have a large body, it must be covered with a good quantity of soft wool ; the wool long

¹ Detondent aut vellunt.

² Turopoia.

and thick over the whole body, especially about the back and the fore-part of the neck; the belly must also be covered: they, which were not thus covered, were called *Apicæ* by our ancestors; and they disapproved of them: the legs must be short; the tails of the Italian breed long; the tails of the Syrian breed short. You must first see that you may have your flock from a good breed: that may in general be known two ways, from their form and their progeny: from their form, if the rams have a wide forehead, if they are well covered with wool, with twisted horns inclined toward the snout, * grey eyes, ears well covered, the breast and shoulder large, a wide rump, a broad and long tail: we must also examine whether the tongue is black or variegated; for they, that have this peculiarity, commonly procreate black or variegated lambs. With respect to progeny, you are to consider, whether they produce handsome lambs. In purchasing we use a form, which the law has prescribed: for some make more, some fewer exceptions; for some, having fixed the price for each sheep, say, that two middling lambs are to be reckoned for one sheep; and if the teeth are decayed from age, that two

* Maxime circum cervicem et collum. The two last words signify the back-part and fore-part of the neck.

^a Rayis oculis. Grey, like the colour of a cat's eye.

are to go for one. They commonly use the ancient form. When the buyer has said, Do you approve of the price ? and the other answers, he does, he is become security for the money. The buyer stipulates according to an old form thus : Are those sheep, concerning which we treat, legally found, as they ought to be, without any defect in seeing, hearing, and in giving milk ? and do they come from a healthy flock ? and do you give me your word, that I may legally have them, if these things are so ? When that is done, the flock hath not changed its master, unless it is counted ; and the buyer can cast the other in costs, if he does not deliver it, although he has not paid the money ; as the other may the purchaser, if he does not pay the money in due time.

I will treat of the four points, feeding, breeding, rearing, health. You must first of all see, that the flock may be properly fed within and out of doors all the year ; that the sheepcotes may be in a proper situation, not too much exposed to the weather, that they may have their aspect more to the east than to the south. The ground, where they stand, must be cleared of rubbish, and on a descent, that it may be easily swept and cleaned ; for a slimy moisture not only spoils the wool of the sheep, but it hurts their hoofs, and it makes them scabby. When they have stood

some

some days, you must give them fresh litter, that they may rest more comfortably, and that they may be kept clean, for they are thus fed to greater advantage. You must also separate them that are with young from the others, as you must likewise them that are sickly. These things are to be observed more peculiarly with respect to the villatic flocks. They, that are fed in woodlands, and are at a considerable distance from houses, are otherwise managed ; for the shepherds carry hurdles and nets, and other implements, to a great distance, with which they may make inclosures in solitary situations ; for they are used to be fed far and wide in different places, so that the winter feed is frequently many miles from the summer lays. I am convinced of this, for my flocks wintered in Apulia, which passed the summer in the Reatine mountains. Between these two places there are public roads leading to these distant pastures : and they make a distinction in regard to time, when the flocks are fed in the same part of the country, so that they go to feed in the summer as soon as it is light, because the grass, being then moist with the dew, is better than it is at noon-day, when it is so dry. They drive them out when the sun is clear above the horizon, that they may make them feed with greater alacrity : about noon, they drive them under shady rocks and spreading trees till the heat

heat abates, and they feed them again at sun-set, in the cool air of the evening. The shepherd must feed them so as to drive them in such a manner, that the head may not be too much exposed to the sun, for the head of a sheep is very tender. After sun-set they drive them to water, and they feed them again till it is quite dark, for at that time the sweetness of the herbage is restored.

They observe these rules from the * rising of the Vergiliæ to the autumnal equinox. In places where the harvest is got in, it is proper to drive them to the field, because they are fed on the grain that is fallen from the ears of the corn, and on the stubble ; and they make the corn-grounds better, by manuring them for the following year. The mode of feeding undergoes a change in the winter and spring seasons, because they drive the flocks to pasture, when the frost is exhaled, and they feed them all day ; and they deem it sufficient to drive them to water once at noon. These are the common rules in relation to feeding : I will now relate what belongs to breeding. The rams, which you are to use for breeding, must be set apart two months before, and they must be more bountifully fed. When they come to the

* On the twenty-second of April, when they rose with the sun.

cotes from pasture, if barley is given them, they become stronger to sustain the labour. The best time for admission is from the setting of Arcturus to the setting of Aquila, for they that conceive afterwards produce ill-shaped and weak lambs. A sheep is in a state of impregnation a hundred and fifty days, and thus it lambs at a time, when the air is tolerably temperate, and when the grass springs with the early showers. During the time of admission, they must use the same water; for a change of water affects the wool, and destroys the foetus. When all the ewes are impregnated, the rams are to be separated from them, because they are troublesome to them in that state. Sheep must not be covered before they are two years old, because the offspring from them is not perfect, and they themselves become wretched: there are none fitter for admission than sheep three years old. They keep them from admission by the application of instruments made of bulrush, or something else. They are kept more commodiously, if they feed them separate. When they begin to lamb, they drive them into the cotes, which they have for that purpose, and they place the young lambs near a fire, and they keep them there, until they become convalescent, till the lambs know their dams, and are able to feed: they then keep their lambs within, while the dams go to pasture with the flock, which being brought

brought back in the evening, the lambs are suckled; and the ewes are again separated, that they may not tread on the lambs in the night. They also suckle the lambs in the morning before the ewes go to pasture. When about ten days are elapsed, they fix poles, and they tie the lambs to them, that they may not hurt their tender limbs, by running about all day. If a lamb will not come to his dam, you must take him to her, and you must anoint his lips with butter or lard, and make him smell to the milk. You must in a few days throw some vetches before the lambs, or some tender herbage, before they go out to pasture, and when they return. They are thus treated, till they are four months old. Some do not milk the dams during that time ; but they do better who do not milk them at all, because they have more wool and lambs. When the lambs are separated from their dams, care is to be taken, that they may not pine ; therefore, they must be fed with good provender ; and you must be cautious, that they may not suffer from cold and heat. When they do not long for the dam, they must be driven to the flock. A lamb must not be cut before he is five months old, and not till the heat or cold has subsided. The rams, which are intended for admission, are best chosen from the dams, which are used to produce two lambs at a birth. The same rules are

to

to be observed nearly with respect to the sheep called *Pellitæ*, which, on account of their wool, as those of Tarentum and other places, are covered with skins, that the wool may not be injured, so that it may not be fit to take the die, nor to be washed and prepared. The cribs and cotes of these are to be cleaned with greater attention than those of sheep with a coarser fleece; they therefore pave the cotes with stone, that the urine of the beasts may not stagnate in them. They are fed with leaves of the fig-tree and with chaff, and with refuse from the vineyard: bran is thrown before them, that they may be satisfied, but not in too sparing nor too abundant a quantity; for both these are unfavourable to good feeding; but *Cytisus* and *Medica* are very friendly to it, for they fatten very kindly and they produce milk. There are many things in relation to health; but the master of the flock must have them in writing, as I have already said; and such things, as are necessary, he carries with him. What remains is concerning number, which some make greater, others less; for there are no limits prescribed by nature in this case. It is almost an invariable rule in Epirus to have one shepherd to a hundred common ^y sheep, two to that number of the *Pellitæ*.

^y *Oves birtæ*, sheep, the fleece of which was coarse.

III. To whom Cossinius says, as you have talked copiously on the subject of the flock, Faustulus, hear what I have to say concerning goats with Homer's ^z Melanthius, and learn the method to speak concisely. The person, who wishes to raise a herd of goats, must first consider the age in choosing it, that he may procure goats, which may turn to good account, and that he may get them, which will breed longest, for such as are young are of greater value than old ones. In regard to form, he must see, that the animals are strong, large, the body smooth, the hair thick, unless they are of the other kind, for there are two sorts of them; that they have two penile marks under the snout, because these are more prolific; that the she-goats have large udders, that they have plenty of milk, and rich in proportion. The he-goat is most eligible with soft and white hair, with a short neck, a wethers rather long. The herd is better, if it is not procured from different places, but consists of such as have been used to be together. Concerning their young, I say what Atticus said before me, that the breed of sheep is more inactive, as they are more placid; goats are, on the contrary, more lively, concerning the activity of which Cato writes in his book: there are wild goats in Fif-

^z Melanthius was Ulysses's goatherd in Ithaca.

cellus,

cellus, which will leap from a rock more than sixty feet high. The sheep, which we raise, are sprung from wild sheep, and so are the goats derived from a wild breed, from which the island of Caprasia has its name. In relation to goats, as they are of the best breed, which produce two kids, the males for admission are usually taken from them: and some take the pains to have their she-goats from Media, because the largest and the handsomest kids are thought to be produced there. With regard to purchasing, I will say, that nobody promises that goats are healthy, for they are never without a degree of fever: therefore they stipulate in few words, and Manilius has left them in writing—Do you give me your word, that those goats are well to-day, that they can drink, and that I may legally have them? There is a marvellous story^a concerning these animals, which Archelaus mentions, that some curious shepherds say that they do not draw their breath as other animals do. Concerning the other parts; I say this in relation to feeding: this cattle is more suitably housed, if the aspect is toward the point where the sun rises in the depth of winter, for it refreshes them. The cote must be paved with stone or covered with shells, that it may not be slimy and dirty. When the

* In the original it is marvellous indeed.

goats must pass the night in the field, the folds must be littered toward the same aspect, that the goats may be kept clean ; and this kind of cattle is to be looked after much in the same way as sheep are ; but it has some peculiarities, because it is more delighted with woodland than meadow ground ; for they feed with eagerness on wild shrubs, and in places that are cultivated they devour young shoots, ^b from which circumstance they are called *Capræ*: on this account, according to the rule of letting a farm, an exception is usually made, that the farmer is not to feed any goats on it, for their teeth are inimical to plantations. The astronomers have given these a place in the heavens, although they have excluded them from the twelve signs. In relation to breeding, they drive the he-goats at the end of autumn into the cotes, as it has been mentioned in regard to the rams. The she-goat brings forth young in the spring season. With respect to rearing, the kids, when they are three months old, are turned to the herd to increase it. What shall I say in relation to the health of beasts, which are so often ailing, except that one thing, that the masters of the herd have some things in writing, which they may use as remedies for certain diseases; and for wounds, which

^b A carpendo capræ nominatæ.

frequently

frequently fall to their lot, because they fight, and they are fed in thorny places? What remains relates to number, which is less in a herd of goats than in a flock of sheep, because the females are wanton, and they disperse: sheep, on the contrary, flock, and they are more disposed to unite; therefore they choose to raise many rather than great herds, for disease soon finds its way to a large number, and brings them to destruction. They think that a herd of fifty is sufficiently numerous, which seems reasonable when referred to an instance, which Gaberius the Roman knight experienced; for when he had a thousand acres on the confines of the city, he heard from a goatherd, who brought ten goats to the city, that they yielded him a profit of a *Denarius* each day; he raised a herd of a thousand, in hope that he should receive a daily profit in proportion: but he was so much deceived, that he lost all his herd in a short time from disease. They feed a herd of about a hundred in the country of the Salentini and about Casinum. There is commonly a discrimination in respect to males and females: some have one he-goat to ten females, as I have; others have one to fifteen, as Menas; and some have one to twenty, as Murius.

IV. But who goes out from Italy to expatriate

on the breed of swine, although ^c Scrofa ought to be the best qualified to speak on the subject, as his name implies? To whom Tremellius replies, You seem to be ignorant of the reason why I am called Scrofa: therefore, that these persons may know it, you must know that my family had not this surname originally, nor am I descended from ^d Eumæus. My grandfather was first called Scrofa, who was left Quæstor under Licinius Nerva the Prætor in Macedonia, who presided over the army, till the Prætor returned. The enemy, thinking that they had an opportunity of obtaining a victory, began to make an impression on the camp, when my grandfather exhorted the soldiers to take arms, and to go against them: he said he would soon disperse them as a sow disperses pigs; which he did, for he routed the enemy, and put them to flight in that battle; so that Nerva was called Imperator, my grandfather had the surname of Scrofa; and my great grandfather and my superior ancestors were never called by this name; and I am the seventh of Prætorian dignity in our family; and I do not wave saying what I know of the swinish breed, for I have studied Agriculture from the beginning, and the subject concerning swine is com-

^c Scrofa means a sow that has farrowed.

^d The herdsman of Ulysses.

mon to me and to you, as we are great dealers in this kind of cattle ; for who is there among us, that has a farm, who has not swine ? and who has not heard our ancestors say, that he is idle and expensive, who hangs a flitch of bacon in his larder from the butcher's shop, rather than from his own farm ? He then, who wishes to have a good herd of his own, must first choose swine of a good age ; secondly, of a good form, that is, with large limbs, the feet and head excepted, of one colour rather than variegated ; that they may have these qualities, you must examine the boars ; they must also have large necks. Swine of a good breed are known from their appearance, their progeny, and their country ; from their appearance, if the boar and sow are handsome ; from their progeny, if they are prolific ; from the country, if you get them large rather than slender from the places, where they are bred. They are used to be bought thus : Are those swine healthy, and may I have them according to law, and are they free from blemish, and not from a morbid herd, do you pass your word for them ? Some add these words : Are they free from fever ? In regard to feeding, a wet place is adapted to this kind of cattle, for they delight not only in water, but in mire : and on this account they say, that, when wolves have laid hold on swine, they draw them to the water, because

they have such an aversion to the heat. This animal is fed chiefly on Maſt, and on Beans and Barley, and other corn, which not only fatten it, but they give the flesh a pleasant flavour. They drive swine to pasture in the morning in the summer, and before the heat comes on ; they force them to a shady place, especially where there is water ; they feed them again in the afternoon, when the heat is abated : they do not drive them to pasture in the winter, before the frost has disappeared and the ice has thawed. The boars are to be separated for breeding two months before. The best season for admission is from Favonius to the vernal equinox, that the sow may farrow in the summer; for it is in the state of impregnation four months, and it then farrows, when the earth abounds with grafs. The sows are not to be admitted before they are a twelvemonth old ; it is better to wait till they are of the age of twenty months, that they may farrow when they are two years old. They are said to do this well till the seventh year, when they have begun. When they are admitted, they drive them into miry inclosures and caverns, that they may roll in the mud, which is as refreshing to them as the bath is to human creatures. When all the sows are impregnated, they seclude the boars from them. A boar of eight months begins to cover : he continues to perform the duties of his

his station to a certain period ; he then declines, till he goes to the butcher, and is given to gain the good will of the populace. The swine had a peculiar appellation in Greek formerly, from a word which signified to sacrifice : for the beginning of sacrificing beasts seems to be taken from the swinish breed, of which there are vestiges ; for hogs are sacrificed at the rites of Ceres ; and a hog is slain, when we enter into acts of federation at the beginning of a peace ; and ancient persons of distinction did this at the beginning of the nuptial ceremony ; and among men of rank in Hetruria, the new married lady and husband first sacrifice a hog. The ancient Latins also and the Greeks seem to have done the same thing in Italy ; for our women have an allusion to this, when they say that young ladies are fit for the nuptial state. They say that swine were bestowed by nature for the purpose of feasting ; and they were held in more than common esteem ; and salt was applied to preserve their flesh. The Gauls have been used to make the best and largest flitches ; and hocks, sausages, spare-ribs, and gammons are brought from Gaul to Rome every year to this day. Cato writes concerning the largeness of the Gallic flitches, and says that some thousands of them find their way to Italy. The swine generally gets so fat in the spring, that it can hardly stand or walk ; and if any one is desirous

furious of removing it, he conveys it in a cart. There was one killed in Lusitania in Spain: Attilius, a Spaniard, in nowise given to tell what was not true, and a man of great learning, told L. Volumnius the Senator, that a piece with two ribs was sent him, which weighed enormously, and the size of the animal was extraordinary. To whom I reply, there was a thing equally extraordinary in Arcadia; for I went to see a sow, which not only could not rise on account of its bulk, but a field mouse had made its nest and produced young in its body. I heard that this was done in another place also. They judge whether a sow is a good breeder from its first litter, for it does not alter much in the others. In relation to rearing, which they used to call Porculation, they suffer the young pigs to remain with their dams two months; but they wean them, when they are capable of feeding. Pigs, that are farrowed in the winter, are poor on account of the cold, and because their dams are inattentive to them, because they have little milk, and because their teats are hurt by the teeth of the young pigs. A sow must rear her own pigs in her own Sty, because they despise the litter of another; and if they are disturbed in breeding, the consequence is bad. Their year is naturally divided into two parts, for the sow breeds twice in that period. It goes with young four months;

it

it bestows two in rearing them. You must make your Sty three feet high, and a little wider^c, of such a height from the ground, that the sow may not prove abortive in getting out of it. Let the entrance be sufficiently high, that the swineherd may without difficulty see that the young pigs are not overlain, and that he may be able to clean the Sty. There must be a door to the Sty, and the threshold must be about a foot and a span high, that the young pigs may not get over it, when the dam goes out. As often as the swineherd cleans the sty, he must throw some sand over the floor, or any thing else that may dry up the wet; and when the sow has farrowed, he must support her with more food, that she may give a more bountiful supply of milk; they usually give about two pounds of barley soaked in water among the victuals, and they also double it in the morning and evening, if they have not other things to afford her. When the pigs are weaned, they are called by some *Delici*, and no longer sucking pigs: they are deemed pure on the tenth day after farrowing, and they were called *Sacres* by the ancients, from the circumstance that they were said to be then first fit for sacrifice: and thus Plautus, when he thinks a person in need of it, that an expiation may be made in

^c i. e. than three feet.

Epidamus, asks, of what value are the pigs called *Sacres* here ? If the farm afford them, the husks and the coarse remnants of grapes are usually given them. Having lost the name of sucking pigs, they are called *Nefrendes*, because they are not yet able to eat beans. Porcus is an ancient Greek name, but it is now obsolete, because it is now called Choiros. They take care that the sows may have water twice a day, that they may produce milk. They ought to produce as many pigs as they have teats : if they have less, they are not good breeders ; if more, they look on it as a prodigy ; as that, which is recorded in ancient times, when the sow of 'Æneas farrowed thirty white pigs, which portended that the town of Alba would be built in thirty years, as the people of Lavinium did. There are traces of this sow and pigs to this day, because there are statues of them in brâfs in a public situation ; and the carcâfs of the dam, which has been kept in brine, is shewn by the priests. They can rear eight small pigs at first ; if there are more, half of them is usually taken away by skilful farmers, because the dam can neither supply them with milk, nor can the litter come to any degree of

¹ Virgil has copied Varro not a little in his didactic poetry, and he does not seem to have forgotten him in the Æneid. See lib. iii. 390.

passable strength. They do not let the dam go out of the Sty for ten days after farrowing, except to drink; after the expiration of ten days, they suffer her to get out to feed to a place near the villa, that, by frequently returning, she may be able to rear her pigs. When they are grown, they are desirous of following the dam to feed: they then separate them from the dam, and feed them by themselves, that they may be able to bear the loss of the dam, which they do in ten days. The swineherd ought to accustom them to the sound of the horn: when they first confine them, when they sound the horn, they open the door, that they may go to a place, where there is barley laid for them at length; for thus less of it is wasted, than if it is placed in heaps, and more pigs get to it with ease: they are then summoned to come in the evening, that they may not be dispersed and lost. Young boars are cut, when they are a year old, and not less than six months, after which operation they change their name, and they are called *Maiales*. In relation to the health of swine I will only mention one thing: if the sow cannot afford the sucking pigs a supply of milk, parched wheat must be given them, for it affects them with looseness, if it is in its crude

* Because they were then fit to be sacrificed to Maia, the mother of Mercury.

state;

state; or barley must be given them from water, until they are three months old. Concerning number, they think that ten boars are sufficient for a hundred sows, and some take away from this number. They have great herds of different number; but I think a hundred a moderate herd: some make it to consist of a hundred and fifty: some double the number, some make it larger than that. A less herd is less expensive than a larger one, because the swineherd looks for fewer attendants. Thus the proprietor constitutes the number with a view to utility, not that he may have a number of boars, for that is to be taken as nature directs. This is what he said.

V. But Q. Lucienus, a polite and jocose person, a friend of all of us, coming in says, be of good cheer, Epirotic Agriculturists, and he pays peculiar attention to our Varro. He had saluted Scrofa in the morning. When some had saluted him; and some had reproached him, because he came so late to the meeting, he says, I will examine you now,^b and we will indulge in a little free conversation. But, Murius, come here while I pay my money to Pales, that you may bear me

^b Et huc afferam corium et flagra. Literally, I will bring hither my skin and my whips. He means, he will take a joke, and in return will exercise his wit. *Alieno ludere corio* is proverbial.

testimony,

testimony, if they ask for it again. Atticus says to Murius, relate to him what conversation we had, and what part of the subject has not been discussed, that he may be prepared for his part ; but let us in the mean time prepare for the second act, concerning the herd : on which Vac- cius says, I will now speak on this subject, and relate what I know concerning the herd, that, if any one wants information, he may learn ; if any body understands the subject, he may observe where I may be deficient. Be attentive to what you undertake, Vaccius, says he ; for the ox ought to be very eminently distinguished, especially in Italy, which is thought to derive its name from the herd. For ancient Greece, as Timæus writes, called it Italy from the number and beauty of its bulls, and from the breed of its calves. Others have written, that Hercules followed a noble bull thither from Sicily, and he was called Italus. This beast is companion to the labourer in his work, and he may be said to be the servant of Ceres. The ancients were so tenacious of this kind of property, that they made it a capital crime, if any one killed this beast ; of which Attica and Peloponnesus bear testimony. It was on account of the herd, the men of Athens and Argos were so distinguished. I know the dignity of the herd, says he, and that many epithets of distinction come from it, and the grape called

called ¹ *Bumma* has its name from it : besides, Jupiter transformed himself into a bull, when he conveyed Europa through the main, being enamoured with her beauty. It was this, which preserved the sons of Neptune by Menalippa, that the oxen did not destroy the infants in an ox-stall. Lastly, bees derive their origin from the putrified carcass of this beast, whence the Greeks call them *Bougonas*; hence the allusion of Plautius in Latin, when the news were brought that Hirius had his name recorded in the Senate. But be not dismayed, I will satisfy you as well as he who wrote the Bugonia.

First, it is said there are four gradations of age in the herd: the first is that of calves, the second of steers, the third of young oxen, the fourth is that of old ones. They are distinguished at first by the names of a bull and cow calf; secondly, by the appellations of a bullock and heifer; in the third and fourth gradation they are called by the denominations of bull and cow. A cow, that is barren, is called *Taura*; in a state of impregnation it is called *Horda*, from which certain days are denominated *Hordicalia* in the public ² fasts, because cows with calf are then sacrificed. A person, who wishes to buy cattle, ought first to

¹ A large grape, having some resemblance to a cow's udder.

² Calendars, in which was kept an account of the festivals and other remarkable days.

observe

observe that they are of a fit age for breeding, and not beyond it, that they are well made, that their limbs are perfect, that the beasts are of proportionable length and breadth, that they have blackish horns, a wide forehead, large and black eyes, the ears well covered, the cheek bones compressed, a flat nose, the spine gently incurvated, wide nostrils, blackish lips, a thick and long neck, the dewlap pendent from the throat, the body large, good ribs and shoulders, a good rump, a tail reaching down to the heels, having the lower part well covered with hair rather curled, the legs rather short, straight knees, as little prominent as may be, at a proper distance from each other, feet that are not too large, and which do not tread infirmly when the beasts walk, the hoof not too much divaricated, having both parts smooth and equal, the hide not rough and hard to the touch. The different colours are these; the first and best is black, then red, thirdly a light red, fourthly white; ¹ this last is the softest colour, as the first is the most hardy. In relation to the two middle colours, the first is better than the last, both are more valuable than the variegated black and white. Besides, you

¹ *Mollissimus enim hic, ut durissimus primus.* He means the white colour is the indication of want of hardness, the other colour is a mark of real hardness.

must see that the males are from a good breed for the females, the shape of which is to be examined, and that the progeny answers to the appearance of their parentage ; and it is likewise of import to know in what country they have their birth ; for most of the breed of Picenum in Italy are good for labour ; those of Liguria, on the contrary, are of trifling use in this respect. The outlandish breed of Epirus is not only the best of all Greece, but even better than the breed of Italy ; although some fatten from the Italian breed for the victims them, which they say excel in size, and they keep them for the supplications of the gods, which without doubt are to be preferred for religious purposes on account of their excellence in regard to size and colour, which is the more suitable, as white oxen are not so common in Italy as in Thrace, where there are few of any other colour. When we buy them tamed, we stipulate thus : Are these bullocks legally sound, and free from blemish ? When we buy them untamed, thus : Do you give me your word that these bullocks are legally sound, and from a sound herd, and that they are free from blemish ? They, who follow the forms of Manilius, use a few words more. The ^mbutchers, who buy an ox to kill,

^m Their practice rendered them good judges whether the beast

and they who buy one for sacrifice, do not usually stipulate for the soundness of the victim. Herds are most commodiously fed in woods, where there is plenty of young shoots and leaves; they are driven near the sea in winter, and to herbid mountains in summer. I usually observe this in regard to breeding, that the cows may not feed and drink too plentifully a month before admission, because they are thought to breed better when they are lean: on the contrary, I give the bulls more grass and straw and hay, and I separate them from the cows two months before admission. I have as many bulls as Atticus, two to sevnty cows, one a year old, the other two years old. ⁿ I do this according to the rising of the star, which the Greeks call Lyra, but which is called ^oFides in our country. I then turn the bulls to the herd. Some prognosticate whether the progeny will be male or female from the bull's descending to the right or left side. Perfons, who read Aristotle, will understand the reason of this. Heifers must not be covered before they are two years old; that they may calve when thrcy years old; it will be better if they are four years old. Most cows breed during ten

beast was found; and in the second case, the imputation of impiety might supersede the ceremony of stipulating.

ⁿ It refers to admission.

^o It rose in the morning the fifteenth of May.

years, and some longer. The fittest time for covering is during forty days, or a little longer, from the ^P rising of the Dolphin ; for they, which are thus impregnated, calve in the most temperate season : for cows are in a state of impregnation during ten months, concerning which I found a thing of a marvellous kind recorded in writing. The cows must be fed in grafts grounds, that are well watered. You must take care that they are not too closely confined, that they are not beaten, and that they do not hurt themselves by running : thus, because the ^q flies and some small animals under the tail often torment them in the summer, some are wont to confine them in inclosures, that they may not suffer from them. You must litter them with leaves or something else, that they may rest more comfortably. You must drive them to water twice in the summer, once in the winter. When they calve, you must keep some wholesome fodder near the stalls, that they may eat a little of it, when they get out, for they are squeamish at that time : and you must see that the place where they are is not too cold ; for cold and hunger make them poor. In rearing, you must see that the sucking calves may not lie with their dams, for they tread on them. They

^P It rose in the evening on the tenth of June.

^q Called Tabani.

must be had to them in the morning, and when they have returned from pasture. When the calves are growing, the cows are to be supported by throwing some green provender into the cribs. The ox-stalls are also to be laid with stone or something, as almost all places, where beasts stand, are, that their hoofs may not become putrid. The calves are fed with their dams from the autumnal equinox. They must not be cut before they are two years old, because they do not easily get well, if you do this before ; and they, that submit to the operation after that period, are dull and of no great utility. There must be a selection also made every year, as in other flocks, and the refuse must be disposed of, because they occupy the place of them, which may become useful. If any cow has lost her calf, you must set them under her, the dams of which do not afford them a sufficiency of milk. They give calves six months old wheat-bran and barley meal and some tender grafts ; and they take care to give them water in the morning and evening. There are many things relating to health, which, being taken from the books of Mago, I take care to make my herdsman read frequently. The number in respect of bulls and cows is to be thus adjusted ; one of a year old, another two

* *Pabulo viridi objiciendo in præsepiis.*

years old to sixty cows. Some have a less or greater number ; for some have only two bulls to seventy cows. One man makes his herd consist of a number different from that of another. Some think that a moderate herd of a hundred, as I do. Atticus has a hundred and twenty, and so has Lucienus. Thus said he.

VI. But Murius says, who had returned with Lucienus, while Vaccius was speaking, I will speak on the subject of asses, for I am of Reate, where the best and the largest are bred, from which breed I have raised young ones, and I have sometimes sold them to the inhabitants of Arcadia. He therefore, who wishes to have a good herd of asses, must first see that he takes the males and females of a good age, that they may propagate as long as may be : they must be strong, handsome in every part, the body large ; they must be from a good breed, from the places where the best are bred, which the inhabitants of Peloponnesus do, when they purchase them they breed from, in Arcadia. The most eligible in Italy are from the country about Reate. For if the best ^s Murænæ are on the coast of Sicily, and the best ^t Ellops at Rhodes, these fish are not ex-

^s These were the *murænæ flutæ* of Sicily.

^t This is the Greek name of this fish.

Et pretiosus Helops nostris incognitus undis. *Ovid.*
actly

actly the same in every part of the ocean. There are two kinds of asses, one wild, which are called Onagri, of which there are many herds in Phrygia and Lycaonia; the other is tame, as all those of Italy are. The wild ass is fit for breeding, for he is easily tamed from a wild state, and he never becomes wild, when he is tamed. The male and female are to be chosen with discernment, for the progeny bears a resemblance to its parentage. In dealing they are purchased like other cattle, and they change their master by delivery, and it is usual to refer to soundness and blemish. They are properly fed with corn and the bran of barley. They are admitted before the summer solstice, that they may foal at the same time the ensuing year, for they produce their young in the twelfth month. They do not work them when in the state of impregnation, for the fetus is injured by hard labour. They do not afford the male much cessation from work, for he does not improve by this indulgence from labour. In feeding they commonly observe the same rules as they do in regard to horses. They do not remove the young from his dam a year after he is foaled; they suffer him to be with her in the night the next year; and they have him muzzled: they break him in the third year for such purposes as any one wishes to use the beast. What remains relates to number, of which there are no herds, unless of them which

carry burdens ; for most of them are brought to the mill, or they are used in Agriculture, where any thing is to be carried, or even for ploughing, where the land is light, as in Campania. The herds generally belong to merchants, who carry oil or wine, or corn, or any thing else, on the backs of asses from the country round Brundusium or Apulia to the sea-side.

VII. Lucienus says, ^a I am also coming, that the subject relating to horses may have its course. I have one stallion to ten mares, as Atticus : though it is said that Q. Equiculus, a person of the greatest fortitude, whose father was a military man, used to have an equal number of horses and mares. Persons, who wish to have studs of horses and mares, as some have in Peloponnesus and Apulia, must first consider the age, which is prescribed. You must see that the mares are not less than three years old, nor more than ten. The age of horses, as well as that of other animals, which have not cloven feet, and even that of animals which have cloven feet, is known ; because a horse of the age of thirty months is said to shed his two middle teeth, the two superior

^a Ego quoque adveniens aperiam carceres, et equos emittere incipiam. Literally, I also coming will open the goal &c. *Carceres* here signify the places where the horses were confined before they started.

and

and two inferior teeth ; at the beginning of the fourth year they shed the teeth nearest them, which they had lost, and the teeth called * *Columellares* begin to grow ; at the beginning of the fifth year they lose the two canine teeth ; in the sixth year they grow again ; in the seventh year they usually have all the teeth replaced and complete. The age of horses beyond that period cannot be ascertained ; except when the teeth become prominent and the eyebrows grey, and the parts under them are hollow ; in that case they say that a horse is sixteen years old. They must be of a middle size, neither too large nor too small. A mare must have a wide rump and a belly that is capacious. The horses which you may choose to have for admission must have the body large, they must be handsome, all the parts of the body must have due proportion. It may be conjectured what kind of a horse a colt will make, if he has not a large head, nor ill formed limbs, if he has black eyes, capacious nostrils, pliant ears, a mane that is wide, thick, of a dun colour, curled, the hair being rather fine, bent to the right side of the neck, a breast wide and full, a good shoulder, a belly of a moderate size, the loins compact, the back part of the shoulder wide, the spine broad, not prominent, the tail

* So called because they bore some resemblance to a small pillar.

large and rather curled, the legs even and equal, round knees, not large nor bent inwardly, a solid hoof : let the veins be distinct, which may be of some import, because one of this kind is a good subject for medical aid, when he is ailing. It is proper to know from what race they are, for there are many kinds, and they are distinguished from their countries ; in Greece the Thessalian horses are famous, and those of Apulia and Rosea are celebrated. The signs of future merit are these ; if the animal contends for the superiority in running, or in any other thing ; if, when they are to pass through a river, he goes among the first, and does not look toward the others.

The buying of horses is commonly like purchasing oxen and asses, because they change their master in the same manner, as it is prescribed in the laws of Manilius. Horses are best fed in pasture grounds, or on hay in stables and under cover. When the mares foal, water with some barley in it is to be given them twice a day. The beginning of admission must be from the vernal equinox to the summer solstice, that they may foal in due season ; for they say that they foal on the tenth day in the twelfth month. The colts, that are foaled after that period, are generally bad and useless. When the season comes, the groom must admit them twice a day, in the morning and evening. The person, who attends,

attends, is thus called: for the mares being tied are more speedily admitted by his aid, and the horses are better managed. The mares indicate when they are satisfied, because they defend themselves. If the horse is fastidious, they pound a squill with water to the consistence of honey, they rub the mare with it; they then apply it to the nostrils of the horse. Although this seems hardly credible, it is to be transmitten as matter of record, that, ^y when a horse could not be induced to cover his dam, and when the groom had brought him with his head covered and compelled him to do it, when he uncovered the horse's eyes, he attacked and killed him. When mares are in foal, you must see that they do not labour too strenuously, and that they do not remain in cold situations, because the cold is peculiarly hurtful to them in that condition. You must therefore keep the floor in the stables free from moisture, you must have the doors and windows shut, and you must fix long poles from the manger between each mare, which may separate them, that they may not be able to fight. You must neither cram a mare in foal nor starve her. Persons, who admit every other year, have more lasting horses and better colts; and thus as the

^y See Pliny viii, 42: and Aristotle's History of Animals, ix. 47.

corn grounds called *Restibiles* are more exhausted ; so are the mares, which breed every year. Ten days after foaling, the colts are to be driven to pasture with their dams. You must take care that the dung may not injure the hoofs of the colts. The colts being five months old, when they are brought into the stable, you must give them barley meal with the bran, and any thing else, which they will cheerfully eat. When they are a twelvemonth old, you give them barley and bran, as long as they suck ; nor are they to be weaned before they are two years old ; and when they stand with their dams, they must be gently handled, that they may not be shy, when they are weaned ; and for the same reason you must hang up the bridles, that the colts may be accustomed to see them, and to hear the sound of them when they are moved. When they are accustomed to be moderately gentle, you must set a boy on them twice or thrice on his belly, afterward in a sitting posture. This must be done, when the colt is three years old ; for then he will begin to grow very much and to be strong. Some say that a colt may be broke in after a year and six months ; but it will be better after three years, from whichtime Mongcorn is used to be given him, for this is very necessary for horses to purge them, which must be done during ten days, nor must you suffer him to taste any other food. From the eleventh

eleventh day to the fourteenth, barley must be given him, and a little addition must be made to it every day : what you give him on the fourteenth day you must allow him during the ten days following ; from that time he must be moderately exercised, and when he sweats, he must be rubbed with oil. If it is cold weather,² the stable must be kept warm.

As some horses are calculated for military service, others for carrying burdens, others for admission, others for the course, they are not to be examined and procured with the same properties : therefore the military man chooses and rears and trains one kind, the charioteer and riding-master another, and the person, that wishes to have horses for carrying burdens, does not choose them, as if they were for the saddle or for hunting. In regard to military service, they wish to have them spirited for the camp ; they, on the contrary, rather have them quiet for the road ; on which account these horses are castrated ; for having undergone this operation, and because they are deprived of the power of propagating, they are called ³ Geldings ; as there are *maiales* among swine, and *capons* among fowls. In relation to physic, for the symptoms of diseases and the methods of cure are

² A fire was to be made in it.

³ It is supposed by the author that the Latin word *canterius* was formed from the word *carent*.

numerous,

numerous, the groomi must have them in writing. The doctors in this department are with great propriety called *Ippiatroi* in Greece.

VIII. While we were discoursing, a freedman comes from Menas, who says that the ^b cakes are finished, and the holy rite prepared; if they wished, they might come and sacrifice for themselves. I say, I will not suffer you to go before you enter on the third part, concerning mules, dogs, and shepherds. We must have a short discourse concerning these, says Murius, for Mules and Hinni are of two kinds and different, not from their own genuine breed; for a mule is the offspring of a mare and an ass; the Hinnus is, on the contrary, from a horse and an ass. Both of them are useful, but neither of them breeds. They put a young ass under a mare, when it is foaled, by whose milk it is reared; for they say that milk is better than ass's milk and than the milk of every other beast. They feed the young ass with chaff, hay, and barley; they also serve the supposititious dam, that she may be able to afford the young ass a sufficiency of milk; he being thus reared, may be admitted the third year, nor does he despise the mare, on account of former habits. If you admit him

^b It appears from this passage that the cake called *libum* was used at sacrifice. *Mola* was what was most commonly used, from which the term *immolare* was formed.

younger,

younger, he soon gets old, and his offspring is less valuable. Persons, who have not an ass, which they have brought up under a mare, and who wish to have an ass for admission, choose the largest and the handsomest from a herd, and which comes from a good breed, the Arcadian, as the ancients said ; as we have experienced, from the Reatine breed, where some asses for admission have been sold for three and four hundred thousand festerces.

We buy them in the same manner as horses, and we stipulate in buying, and we do the same as is prescribed in purchasing horses. We feed them chiefly with hay and barley, and we do this more profusely before admission, that we may make the animal sufficiently strong. We take care that the ^cunder grooms may admit them in the same season, in which horses are admitted. When a mare has produced a male or female colt, we rear it. If they are foaled in fenny and dirty situations, their hoofs are soft ; if they are driven to the mountains in the summer, which is done about Reate, the hoofs become very firm. In raising a herd of mules, their age and form are to be examined, in the one case, that they may be able to carry burdens, in the other, that they may be handsome in appearance ; for, these qualities

^c Per *perorigas curamus &c.* *Perauriga* meant an under charioteer.

being

being united, all vehicles are drawn along the public roads. You might prove this on my authority, says he, if you had not a stud of mares, and if you had not sold herds of mules. What is called a Hinnus is from a horse and an ass, less than an ass in the body, commonly of a brighter colour, his ears like the ears of a horse, the mane and tail like the horse's mane and tail. He is likewise in the belly of the dam twelve months. They bring them up and feed them like young horses, and they know their age from their teeth.

IX. Atticus says, what remains relates to dogs, which more particularly belong to us, who feed the woolly flock : for the dog is the guardian of this kind of cattle, because they want him to defend them ; in which class are sheep principally, then goats ; for the wolf is apt to lay hold of them, to which we oppose the dog to protect them. Some of the swinish breed can vindicate themselves, as swine, boars, the maiales^d, sows : for these bear some affinity to the wild boars, which often kill dogs in the woods. What shall I say concerning the herd, when I know that a herd of mules was feeding, and when the wolf came to them, the mules flocked round him, and destroyed him : and bulls are wont to make a

^d Pigs, which have been cut.

stand against wolves, and to drive them away with their horns?

Because there are two kinds of dogs, one for hunting, which belongs to fierce and savage beasts; the other is procured for the sake of protection, and belongs to the shepherd. I will speak on the subject with a view to its division into nine parts. They are first to be procured of a proper age, because whelps and old dogs are neither a defence to themselves nor to the sheep, and they sometimes are a prey to wild beasts. They ought to be handsome in their appearance, of large size, they ought to have blackish or grey eyes, well formed nostrils, dark coloured or red lips, the upper lip neither turned upward nor yet hanging down, the lower jaw compact, and having two teeth a little prominent in the right and left side, the upper teeth being rather straight than bent, which ought to be sharp and covered with the lip, large heads and ears, the latter pliant, a thick neck, the spaces between the joints long, straight legs, inclining rather toward the inside than toward the outside, large and high feet, which tread firmly when the dog walks, the toes distinct, hard and incurvated nails, the bottom of the foot not too hard, but rather flexible and soft, and the back part of the body compact, the spine neither prominent nor crooked, a thick tail, a deep voice, a large mouth. The best colour

is white, because it is more discernible in the dark. They also wish the females to have a good udder, the teats being equal. You must also examine that they are of a good breed; and they are distinguished by their countries, as the Lace-dæmonian, the Epirotic, the Sallentine breed. You must see that you do not buy your dogs from hunters or butchers, because these are too lazy to follow the cattle; the others, if they see a hare or a stag, will follow that rather than the sheep. A bitch bought from a shepherd is more eligible, which has been used to follow the sheep, or one, which has not been habituated to any thing; for a dog easily acquires any habit, and that is stronger, which attaches him to the shepherd, than to the sheep. P. Aufidius Pontianus of Amiternum, when he had bought flocks of sheep in the remotest parts of Umbria, to which the dogs had come without the shepherds, who were to convey them to the pastures of Metapontum and town of Heraclea; when they, who brought them to the place, returned home, the dogs, from their attachment to the men, although there was a distance of many days journey, found themselves food in the fields, and returned to the shepherds in Umbria in a few days: nor had any of the shepherds done what Saferna prescribed in his book on Agriculture, that the dogs might follow them. It is of the first import that your dogs

dogs should be of the same breed, because when they are of the same breed, they afford the surest protection.

What follows relates to purchasing. The animal becomes the property of another, when it is delivered from the first to the second proprietor. The same stipulations take place in relation to soundness and blemish as are made in respect of cattle, unless this ceremony is avoided. Some set a price on each dog; others agree that the whelps shall follow the dam; others, that two whelps shall go for one dog, as it is usual for two lambs to be reckoned for one sheep. Most persons like to have dogs, which have been accustomed to be together. The food of a dog has greater resemblance to what human creatures eat, than what is given to beasts, for he is fed from the kitchen. You must take care that they have victuals, for hunger prompts them to go in quest of food, if it is not given them; and they will take it from the flock. Some think that they will go to such lengths as to give an air of truth to the fable concerning Actæon, that they may be likely to fall on their master. You must also give them barley-bread with milk; for being accustomed to this food, they do not easily leave the flock. They do not suffer them to eat the flesh of a dead sheep, lest, when used to the flavour, they may not have the power to abstain. They also

give them broth made of bones, and the bones themselves, when bruised, for they are said to make their teeth more firm and the mouth more expanded; besides, their jaws are exercised with more energy, and they become more fierce on account of the taste of the marrow. They accustom them to take their food by day, where the flock is fed; in the evening, where it is housed. In relation to breeding: they begin to admit them at the beginning of spring, for they are then said to feel the impulse of warmth: when they are thus admitted, they whelp about the summer solstice, for they are with young three months. You are to give them barley rather than wheat bread; for it is more nourishing to them, and they give more milk. In relation to rearing: if there are many whelps, you must select them, which you may wish to keep, and you must dispose of the rest: the fewer you have left, the better they are fed on account of the copious proportion of milk. They are littered with straw, or any other thing; because they are more easily raised, when they are well littered. They begin to see in twenty days. They are not weaned from the dam the first two months after pupping, but they withdraw them gradually. They bring them together and irritate them to fight, that they may become more fierce; nor do they suffer them to be worried, whereby they

may

may become more inactive. They likewise accustom them to be tied, first with light chains, which if they try to gnaw, that they may not use themselves to do it, they are wont to deter them with stripes. Their kennels are to be littered in rainy weather with leaves or grafts, for two reasons, that they may not be dirty, nor catch cold. Some cut them, because they think they are less apt to leave the flock: some do not, because they believe they become less fierce. Some rub their ears and between their toes with almonds pounded in water; because flies and tikes and fleas are used to torment them, if you do not make use of this composition. That they may not be wounded by other beasts, they wear a collar, which is called *Melium*; that is a belt made of strong leather, set with small nails, the extremities of which are covered with soft leather, that the hardness of the iron may not hurt their necks. If a wolf, or any other beast, is wounded by these, it makes other dogs, that have not the collar, remain secure. The number of dogs is usually procured in proportion to the size of the flock: they commonly think that well proportioned to have one dog to follow each shepherd: others have established a different mode in regard to number. But if the country abounds with beasts of prey, there ought to be more dogs, which may accompany the shepherds along

wild and long paths to the summer and winter lays. Two are sufficient on the farm for the vilitatic flock, a dog and a bitch : for then they are more assiduous, because the dog becomes fiercer; and if one is ailing, the flock will not be without a dog. When Atticus was considering whether any thing had escaped him : I say, this silence calls for another to undertake his part.

X. What remains in this part relates to the number and kind of shepherds to be procured. Coffinius says, that older men are to be procured for the herd, and boys for the flock, and such as are stronger than both of these, who may have a more laborious task in feeding than them, who return to the villa on the farm every day. Thus you may see young men, and them generally armed, in the woodlands ; when not only boys, but girls feed the cattle on the farm. You must compel them, who feed, to depasture in common all day; on the contrary, every one must be with his own flock during the night. They must all be under one master of the herd : he must be older and more experienced than the others ; because they obey with a more even mind them who excel in age and knowledge: but the person must be only so far superior in years, that he may not be the less able to sustain fatigue on account of old age; for neither old men nor boys easily bear the difficulty
of

of the paths, and the height and roughness of the mountains, which they must bear, who follow the cattle, especially the herd and goats, which are so much delighted in feeding in woods and on rocks. The eligible qualities of these men are strength, swiftness, activity, speed, who may not only be able to follow the cattle, but also defend them from beasts of prey and robbers, who may be able to lift burdens, to run, to throw the dart. Every country is not calculated for this business; neither the Basculus nor the inhabitant of Andulafia is fit for it: the Gauls are the best adapted, especially for the herd. In buying, six things commonly constitute a lawful proprietor: if he came by just inheritance: if he received him, as he ought, from a proprietor according to the civil law: or, if he legally quitted his master at the time he ought: or, if he received him according to custom: or, if he bought him according to due form: or, if he was publicly sold among the property, or in the distribution of the goods of some person. In purchasing these, the property usually follows; or, if any exception is made, the stipulation says that he is found, free from imputations of theft and from blemish. If the title is not warranted, double the value is

* Neque Basculus neque Turdulus' idonei. Basculus means an inhabitant of Granada, the other of Andalusia.

promised: or, single cost, if it is so agreed. They ought to have their meals separately in the day-time; their supper in the evening is common, when they are under one master. The master must provide that all the implements may follow, which are necessary for the cattle and the shepherds, especially such as belong to the men's victuals, and to the cattle's medicine; for which purpose the masters have beasts of burden; some have mares, others any other beast that may be able to carry a burden on his back. In relation to the breeding of shepherds, who always remain on the farm, it is easy for them to have a maid servant in the villa; nor has this pastoral Venus any ambition beyond this. But in respect of them, who are in the woodlands and in such wild situations, and not in the villa, but who avoid the rain in temporary huts, many think it useful to let these have women, who may follow the flock, and get the shepherds victuals, and to make them more assiduous: but these women must be strong; not filthy creatures, which do not yield to men in drudgery in many countries, as you may see in Illyricum; because they can feed the cattle, or carry wood for fuel, and dress the shepherds' victuals, or take care of the household implements. In relation to nursing, I say this, that the same women are commonly nurses and mothers. Tremellius at the same time looks at me, and says,

I have

I have heard you say, when you came to Liburnia, that you saw the mothers carrying wood and their children at the same time, some one child, others two; who might shew that our breeding women, who lie some days in 'beds of state, are not so brisk and estimable. To whom I reply, certainly, for I have also seen this in Illyricum: a woman with child, when the time of lying-in has arrived, hath frequently gone from her work a short time, and hath brought back the child, which you might not think she had produced, but accidentally found; and this too among women, whom they call ^svirgins there, about twenty years of age, to whom custom has not denied the liberty of granting favours to any persons they may wish before marriage, and of walking about without an attendant, and even of having children. Such things as belong to the health of the men and cattle, the master of the herd must have in writing, that they may be cured without the aid of a doctor: but he is not qualified for his situation without some degree of learning, for he cannot despatch the business of the master of the herd without it. In relation to the number of shepherds, some make it greater, others less. I

^f In netted curtains, according to the original

^g In the unqualified signification of the word *virgo*, which was formed from the obsolete Latin word *vira*.

have one for eighty ^h sheep with coarse wool ; Atticus has one to a hundred. In large flocks of sheep, which some make to consist of some thousands, they can more easily take from the number of the shepherds, than from less flocks, as those of Atticus and mine : mine consist of seven hundred, you had eight hundred, I think. We have a tenth part of the number of rams.

ⁱ There are two men allowed to attend fifty mares. Each of these should have a mare for riding in those countries, in which they are wont to drive them to stables, as it is frequently done in Apulia and Lucania.

XI. As we have finished what we promised, let us go on, says he. I say, if you add, what has been proposed, which relates to the extraordinary profit of the flock, which is concerning milk, cheese, and shearing. For milk is the most nutritious of every liquid substance, which we desire for our sustenance ; first sheep's milk, then that of the goat : but that, which is of the most cleansing quality, is mare's milk, then ass's milk, then cow's milk, afterwards goat's milk. But there are some distinctions in respect of this,

^h These were called *oves Lirtæ*, in contradistinction to the *pel-litæ*.

ⁱ This looks as if it was interpolated : probably from the latter part of the seventh section.

from the feed, the nature of the beasts, and from the milking. From the feed, which is on barley and straw, and on fodder, which is altogether dry and hard. That is the best purifier, which is from green pasture, and which is produced from beasts, which have fed on herbs, which when administered usually purge us. From the nature of the beasts, because milk is better from them which are healthy, and from them which are not old, than from them, which are otherwise. From the milking; that is the best, which is neither taken a long time, nor yet immediately after calving. The cheese of the most nutritious quality is what is made of cow's milk, and when eaten it does not digest very rapidly. Cheese made of sheep's milk comes next. What is made of goat's milk is the least nutritious, and it digests very rapidly. There is likewise a difference whether cheese is soft and fresh, or dry and old. When it is soft, it is said to be more nutritious, but it soon digests; old and dry cheese is said to have the opposite qualities. They begin to make cheese from the ^k vernal rising of the Vergiliæ, to the summer Vergiliæ. They milk in the spring in the morning, to make cheese; in other seasons, at noon; although, on account of situation and difference of fodder, it is not the same in every

* The twenty-second of April.

country.

country. To two ¹*Congii* of milk they put ^ma certain quantity of rennet, that it may coagulate ; that of superior quality comes from the stomach of a hare ; and that, which comes from the stomach of a kid, is better than what comes from a lamb. Some substitute the juice of the fig-tree and vinegar for rennet : some likewise make use of what some of the Greeks call ⁿ*Opos*, what others call *Dakruon*. I say, there is no doubt but that a fig-tree was planted near the temple of the goddess Rumia by the shepherds ; for they usually sacrifice with milk there, instead of wine and fucking beasts ; for the teats of animals were called *Rumæ*, as it has been already mentioned. They make use of salt, and the fossile is better than marine salt. In regard to the shearing of sheep, I first consider before I begin, whether they have the mange or wounds, that, if it is necessary, they may be cured before they are shorn. The season for shearing is between the vernal equinox and the summer solstice, when the sheep begin to sweat, from which circumstance the new shorn wool is called *Succida*. They rub the new shorn sheep with wine and oil the same day ; some mix white wax and lard with them : and if

¹ A *Congius* held seven pints 4. 942 cubic inches.

^m The Latin says of the size of an olive.

ⁿ Milky juice of the wild fig-tree.

^oa sheep is covered, they anoint the skin internally with the same composition, and they cover the animal again. If any has received a wound in shearing, they smear the place with tar. They shear the sheep, which have coarse wool, about ^P barley harvest ; in some places before the hay harvest. Some shear their sheep twice a year, as in the nearest parts of Spain, and they do it every half year. They bestow double the trouble, because they think they have more wool by these means : and for this reason some mow their meadows twice. The more industrious usually shear their sheep on mats, that none of the wool may be wasted. Fair weather is taken for this purpose, and they generally do it from the ^q fourth to the tenth hour ; because the wool shorn during the heat of the day is softer on account of the natural moisture, and it is more ponderous, and of a better colour. Some call the wool that is shorn and rolled ^r by one name, some by another ; from which expression it is evident, that the mode of plucking the wool is anterior to shearing. They also, who now pluck their sheep, make them fast three days before, because they retain their wool with less power in a languid

^o This was the *ovis pellita*.

^P The end of June, or beginning of July.

^q From ten to two o'clock.

^r Some called the fleeces *villera*, some *vilamina*.

state. They say that shearers first came from Sicily into Italy, after the year four hundred and fifty four, as it is recorded in writing in a public place of Ardea, and it is said that P. Ticinius Menas introduced them. The ancient statues prove there were no ⁵ barbers in former days, because most of them represent the hair and a long beard. Cossinius says, as the sheep supplies us with wool to clothe us, the goat bestows its hair for nautical use, and for military service, and for the artificer's use. Some nations are clothed with the skins of these beasts, as in Getulia and Sardinia; the use of which also appears to have been known among the ancient Greeks, because the old men in their tragedies are called by a name, which has an allusion to this; and in their comedies, they, who are employed in rural labour, bear testimony to this, as the young man in Cæcilius, and the old man in the Self Tormentor of Terence. They are shorn in a great part of Phrygia, for they have very strong hair, from which the 'Cilicia, and other things of that kind, are usually made: but they say that these things acquired this appellation, because this kind of shearing was first practised in Cilicia. They said this, nor did Cossinius dissent from them; and a

⁵ *Tonsores* make this a pun in the original.

^t Garments made of goats' hair, worn by soldiers and sailors.

freedman of Vitulus coming at the instant from the gardens to the city, turns to us and says, I went to your house to request that you would not make this festival short, and that you would come speedily. I and Scrofa go into the gardens to Vitulus : some of the others go home, some to Menas.

M. TERENTIUS VARRO

CONCERNING

AGRICULTURE.

BOOK III.

CHAP. I.

AS there are two kinds of life handed down to us, the rustic and the city life, there is no doubt, Q. Pinnius, but that these are different not only in regard to situation, but that they have a distinct origin in respect of time; for the rustic life is much more ancient, because there was a period, when men tilled the ground, and when a city had no existence; for the most ancient town in Greece is said to be Boeotian Thebes, which the great Ogyges built; in the Roman territory, Rome, which Romulus built; and it may be said at this time, not when Ennius wrote, there are seven hundred years, more or less, since the celebrated city of Rome was built under divine auspices. Thebes, which was built before the deluge in the time of Ogyges, is about two thousand

thousand one hundred years old, which period, if you refer to the beginning, when the ground began to be tilled, and when men dwelt in cottages and huts,² when they had yet no knowledge of architecture, persons, who tilled the ground, are anterior to the inhabitants of cities an incalculable number of years: nor is it to be wondered at, because divine nature bestowed the soil, human contrivance built cities. As the arts are said to be found out in Greece in a thousand years, the ground was not long before it experienced the benefit of cultivation. The cultivation of the soil is not only of greater antiquity, but it is likewise of greater utility; therefore our ancestors rationally sent the inhabitants of the city into the country, because they were maintained by the Roman peasants in time of peace, and they were protected by them in time of war. And they, not without reason, called the earth Mother and Ceres; and they thought the persons, who cultivated it, led a pious and useful life, and that they alone descended from the family of Saturn; and this seems agreeable to reason, because the sacred rites of Ceres are called, by way of eminence, the rites of Initiation: and the name of Thebes also indicates the antiquity of agriculture, because the name was given it from its si-

² Literally, nor did they know what a wall or a door was.

tuation,

tuation, not from its founder ; for in the old language, and in Greece, the Bœotians ^b call hills by this name, without aspiration ; and among the Sabines, who came originally from Greece, they call them so now, a vestige of which remains in the country of the Sabines on the *Via Salaria*, not far from Reate, where a ground on an eminence is called by this appellation. Agriculture in its infancy was quite indiscriminate on account of its poverty ; for persons descended from shepherds planted and fed cattle in the same ground ; when they afterward increased, they made a distinction, and some were called Agriculturists, and some Shepherds ; which last are of two kinds, although not sufficiently distinguished by any body ; for feeding things about the villa is one thing, pasturage in the field is another : this is well known and reputable, and it has a peculiar name, and it makes the farmers very wealthy, and on this account they rent or purchase woodlands. The first of these, which belongs to the villa, which seems humble ; when it was first connected with agriculture, is not well explained by any body, as far as I know. Thus when I considered that there are three kinds of farming, which are established for the sake of gain, one

^b Vocant collis Tebas. Some imagine the place had its name from the ship, which conveyed Cadmus to Greece, called Τεβαν.

relating to agriculture, the other to live stock, the third to the villa department; I composed three books, two of which I wrote, one to Fundanias Uxor on the subject of Agriculture; the second to Tyrannus concerning cattle; the third, which relates to the profits of the villa, I send to you, which I seem to think to owe to you, as a neighbour and on the score of friendship. For as you have a villa admired for a finished inside, and famous tessellated pavements, you might think it of little consequence, unless the walls were also rendered respectable on account of your learning. I have sent you these things, that it may be more admired for its real utility, as I was able to compose them, recollecting the conversation which we had on the subject of a perfect villa; to illustrate which, I will now begin.

II. When I and Q. Axius, the senator of our tribe, had given our votes in the comitia for *Ædiles* in the heat of the day, and we wished to be near the candidate, whom we favoured, when he returned home: he says to me, until the suffrages are taken, let us shelter ourselves under the shade of a public villa, rather than be thus incommoded. I say, I do not only think that bad counsel is very pernicious to the consulter; but good counsel is to be esteemed useful to the person who consults and who is consulted; and thus we

we go to the villa : there we find Appius Claudius the Augur fitting, that he might be at hand to be consulted, if occasion had required it. On his left hand sat Cornelius Merula, descended from a family of consular dignity, and Fircellius Pavo of Reate ; on his right hand sat Minutius Pica and M. Petronius Passer. When we had approached, Axius smiling says to Appius, do you receive us into your aviary, where you are fitting among your birds ? He replies, I receive you with particular pleasure, the taste of whose birds is still on my palate, which you set before me a few days since in your Reatine villa, near the lake Velinus, when I was going on the business relating to the controversy of the ^c Interamnates and the people of Reate. But, says he, is not this villa, which our ancestors built, on a more frugal plan, and better than that elegant one of yours near Reate ? Where do you see citron wood, or gold, or vermillion, or ^d Armenian pigment, or mosaic work, or tessellated pavement here, all which abound in your villa ? And this is common to all the people, the other is appropriated to your use exclusively. This is for the accommodation of citizens and all others, who come from the Campus Martius ; the other is for the

^c They lived toward the north-west of Reate.

^d A light coloured blue.

reception of horses and asses : besides this is useful to carry on the business of the commonwealth, where the soldiers may rest during the election of consuls, where they may display their arms, where the censors may admit the people during the census. Yours, says he, is useful at the extremity of the Campus Martius ; but is it not more costly in respect of ornaments, than those about Reate, as it is daubed with paintings, and not less crowded with statues ? But in relation to mine, there is no vestige of Lysippus or Antiphilus, although there may be many of a planter and of a shepherd : and while my villa is not without an extensive farm, and that well cultivated ; this of yours hath neither a field, nor an ox, nor a horse belonging to it. What has this to be compared with the villa, which your grandfather and great grandfather had ? for it neither sees the produce of the hay-harvest within its walls, nor the fruit of the vintage in its cellar, nor yet corn in its granary ; for this edifice, which is without the city, is no more a villa, than the habitations of them, who live on the outside of the ^eTiberine gate, or in the *Æ*milian buildings. Appius smiling says, as I am ignorant what a villa means, I wish you would inform me, that I may not ex-

^e This was near the Tiber. It has been in modern times called Porta del Popolo.

pose myself by my want of knowledge, for I wish to purchase a villa of M. Seius at Ostia. But if those edifices are not *villa*, which confine yours, which you shewed me, which was bought for forty thousand sesterces, I am afraid lest I purchase a common dwelling of Seius, on the shore of Ostia, instead of a villa ; which edifice L. Merula prompted me to buy, when he told me that he had seen no villa, with which he was more delighted, when he was at his house some days ; nor had he seen any paintings, nor brazen nor marble statue there, but press vessels for the vintage, or oil vats, or olive presses. Axius looks at Merula, and says, what is a villa then, if it hath neither ornaments from the city nor rustic implements ? To whom he replies, yours is no less a villa at the corner of Velinus, which you have in common with your afs, which neither a painter nor a plasterer has seen, than one in Rosea, which is elegantly finished with stucco. When he had signified with a nod, that was nevertheless a villa, which was simply a rustic one, as well as the city villa, and when he had asked what he could infer from these things : What, says he, if your farm in Rosea is to be proved, on account of pasturage, because cattle are fed and housed on it, to be properly called a villa ; this likewise ought to be called a villa, in which great profit is acquired from its stock : for what does

it signify, whether your profit arises from sheep or from birds? Or is the profit more pleasant, which arises from cattle, from which bees are said to have their origin, than from the bees which carry on their work near the villa? Do you sell your boars raised in your villa for more money to the butcher, than Seius sells his wild boars to his dealer? Axius says, how can I have bees of inferior value in my Reatine villa, unless ^f Sicilian honey is made on the farm of Seius, and Corsican honey in the country about Reate: and the reasoning respecting the boars will be, that the mast, which is bought at one place, makes the animal fat, and that, which costs nothing, makes it lean in the other situation? Appius says, He has not denied that what Seius does may be done by you: I myself am convinced of that. For there are two kinds of pasturage; one is that in the field, by which cattle are reared; the other is the villa department, in which are comprised poultry, pigeons, and bees, and other things, which are usually fed in the villa, concerning which Mago the Carthaginian, and Cassius Dionyfius, and others have left some things in separate treatises and promiscuously in writing, which Seius seems to have read; and some receive

^f Sicilian honey was esteemed the best, Corsican honey was of the inferior kind.

greater

greater profit from this department from one villa, than others do from the whole farm. Certainly, says Merula, for I have seen ^g there a great stock of geese, poultry, pigeons, cranes, peacocks, dormice, fish, wild boars, and other things of the venatic tribe ; from which, his ^h house-steward, a freedman, who made his appearance to me, and who hospitably received me in his patron's absence, told me he took more than fifty thousand sesterces every year. I say to Axius, struck with astonishment, you certainly know my aunt's farm in the country of the Sabines, which is near the four and twentieth mile-stone from Rome, on the *Via Salaria*. What then ? says he. I usually pass the middle of the day there in the summer, when I go from the city to Reate ; or I lodge there in the winter on my return. The aviary, which belongs to that villa, has produced to my knowledge five thousand thrushes, at three ⁱ *Denarii* apiece ; so that part alone produced sixty thousand sesterces that year ; twice as much as your farm of two hundred acres at Reate yields. Sixty thousand ! says Axius. I say sixty thousand. But to come to this sum, there must be a public entertainment or a triumph, as there was one then

^g In the villa of Seius.

^h Scriba Librarius. The scribe, who kept the accounts.

ⁱ Two shillings and a penny farthing.

of Scipio Metellus ; or there must be ^k corporation suppers, which being numerous, raise the price of provisions most enormously. You will probably expect this sum every year. I hope it will not consume your aviary : but in the present state of our morals, you may be seldom deceived ; for what year passes, in which you may not see a public entertainment or a triumph, or corporation feasts, which being now innumerable raise provisions exorbitantly ? But, says he, there are entertainments daily in Rome, in its present state of luxury. Did not L. Albutius, a man of excellent learning, as you know, whose compositions are in the style of Lucilius, say, that his farm in Albanum was always exceeded by his villa in respect of profit ; for his farm made a return of ten thousand, his villa of more than twenty thousand sesterces ? If this person had built his villa near ^l the sea, in the situation he wished, he said he might be in the receipt of a hundred thousand sesterces. Did not M. Cato, when he lately undertook the tuition of Lucullus, sell fish from his ponds to the value of forty thousand sesterces ? Axius says, Receive me as a disciple, Merula, in the villa department. He

^k Collegiorum cœnæ. Collegia were companies of the same trade.

^l The advantage arising from commerce and fish was likely to be considerable in such a situation.

says,

says, as soon as you promise me a supper as entrance money, I will begin. I do not decline entering on the task to-day. Appius : I suppose as soon as the geese and peacocks are dead. To whom he replies, what is the difference whether you eat birds that die a natural death, or fish, which you never eat but when they are dead ? But I beg, says he, teach me this branch of the villa department, and explain the importance and management of it, Merula, in a way that will not be tedious.

III. First, says he, the master must understand those things, which may be reared and fed in and about the villa, that they may be a profit and pleasure to him. There are three branches of this kind of knowledge respecting aviaries, hare-warrens, fish-ponds. I call them aviaries, in which all the birds are usually fed within the walls of the villa. I wish you to understand by hare-warrens, not what our forefathers strictly called by that name, where hares are usually kept ; but all inclosures, which are adjoining to the villa, and confine animals to be reared. I likewise call them fish-ponds, which confine fish in fresh or salt water near the villa. Each of these may be divided into two branches ; for in the first part are comprehended such animals as have their existence on land, as peacocks, turtle-doves,

doves, thrushes. The other kind does not live on land only, but it likewise requires water, as geese, teals, ducks. So the venatic kind has two branches; one, in which are comprehended the wild boar, the wild goat, the hare; the other also comprehends things, which belong to the villa, as bees, snails, dormice. There are also two sorts of the aquatic race, because they have fish in fresh and in salt water. In relation to these six parts, three kinds of servants are to be procured, game-keepers, hunters, fishermen; that you may, by their industry, protect your stock during the time of breeding, and then rear and fatten them, that they may come to market. Some things are to be taken without the aid of a game-keeper, or a hunter, or a fisherman, as dormice, snails, poultry. The rearing of these things in the villa was first established: for not only the Roman Augurs procured chickens for the auspices, but heads of families in the country also raised them. Secondly, such things, as are confined near the villa, were raised, and bees, which at first sheltered under the eaves of houses, resorted to their hives. Thirdly, fresh water fish-ponds began to be made, and they were stocked with fish taken out of rivers. There are two divisions of each of these three branches; one called superior, which primitive frugality established; the other called inferior, which more modern luxury

Luxury has introduced. For the primitive plan of our ancestors was to have two aviaries only ; a court on even ground, where poultry was fed, which produced eggs and chickens ; the other was a high tower on the upper part of the villa, in which pigeons were raised. Aviaries have since changed their name, ^m for they have a Greek appellation ; and the luxurious palate of the proprietor hath provided that they may be on a more extensive scale than the *villa* formerly were, that they may stock them with thrushes and peacocks. Thus in the division relating to the hare-warren, your father, Axius, never saw any thing but a leveret from the efforts of his huntsman : for that inclosure was not large at that time, while they now encompass many acres with stone walls, that they may have plenty of wild boars and wild goats. He says to me, were there not many boars in the warren, when you bought your Tuscan farm from M. Piso ? With regard to the third part ; who had any fish-ponds, but what were of fresh water, where they only kept some "squali" and mullets ? What despicable poetaster is there now, who does not say that it is of little consequence to him, whether

^m Ornithones.

ⁿ In my old copy of Varro, this is written Scari.

He has his pond stocked with such fish as these or with frogs? Did not Philippus, when he had turned to the house of Immidius, and he had set before him a beautiful lupus from his river, and when he had tasted it and spit it out, say, may I die if I did not think it was a fish? Thus, I say, our age has enlarged its hare-warrens, and brought its fish-ponds to the sea, and has allured the salt-water tribe into them. Is it not on this account persons have the names of ^oSergius Orata, and ^PLicinius Muræna? Who is there that has not heard of the famous fish-ponds of Philippus, of Hortensius, and of the Luculli? Tell me then, Axius, when you wish me to begin.

IV. He says, ^qI will not play a losing game: that is, I will speak of the present times rather than of the past; for greater profit is taken from peacocks than from common poultry; and I will not dissemble that I wish to begin with the aviary,

^o He first made oyster beds at Baiæ. Pliny ix. 52.

^P He invented ponds for many kinds of fish. Pliny ix. 55.

^q Ego vero, inquit, ut aiunt, post principia in castris. The expression, *post principia in castris*, implies safety. The *principia* in the camp were the superior officers' tents, where the standards of the legions were deposited, and where justice was administered. Itaque nullus in acie locus tutior quam post principia. Livy viii. 8.

for thrushes have added to the value of it, and the 'sixty thousand sesterces have made me glow with desire. Merula says, there are two kinds of aviaries ; one for pleasure, such as our Varro made near Caienum, because he has many friends ; the other is for profit, of which sort salesmen and some people in the city have places for confining the birds, and they rent places in the country, especially among the Sabines, because thrushes flock there very much on account of the nature of the country. Lucullus wished to have an aviary of another kind, but at the same time having some resemblance to the others, which he made at Tusculum ; that he might have the *Triclinium* under the same roof with the aviary, where he might sup in style, and where he might see some birds dressed and served up, and others flying about the windows ; which they have found to be of little use ; for the birds flying about the windows do not please the eye so much as the disagreeable smell overpowers and offends the nose.

V. But as I think you prefer it, Axius, I will speak concerning the aviary which they build for the sake of profit, in which thrushes are raised.

* Mentioned in the second Chapter.

A large

A large ^s building is erected, in the form of a Peristyle, covered with tiles, or with a net, in which they are able to confine some thousands of thrushes and blackbirds. Some add other birds likewise, which are sold dear when fatted, as ^t ortolans and quails. Water must have admittance into this building by means of a pipe, and it must run gently in narrow channels, which may be easily cleaned; for if the water is diffuse, it is more easily made dirty, and it is rendered unfit for drinking; and it must be conveyed from the channels through a pipe, that the birds may not be incommoded with filth. It must have a low and narrow door-way, and particularly of that kind, which they call ^u *Cochlea*, such as is usually made in a pit, where bulls are accustomed to fight. The windows must be few, through which the trees or birds on the outside may not be seen, because the sight of them and a longing after

^s Varro calls it a *Testudo*.

^t *Millariæ*, so called because they fed on millet.

^u *Coclea* sometimes means a winding stair-case, because it has some resemblance to the shell of a snail, and the Italians call it *Scala a Lumaca*. The door-way here meant was, it is probable, made with two doors, in the form of the extremity of such a stair-case, to preclude the possibility of the birds making their escape, when the person, who looked after them, went in and came out.

them,

them, make the birds, that are confined, grow lean. There must be sufficient light, that the birds may see where they may perch, and where their food and water are.

The door-ways and windows must be covered round with smooth plaster, that the wet, or mice or other animals may not get in. Round the walls of this edifice in the inside there must be a number of perches, where the birds may rest: beside these, there must be perches inclined from the ground toward the wall, and others fixt across them gradually, at moderate distances, in the manner of lattice work used at scenic performances, and in the theatre. The water, which they are to drink, must be on the ground underneath, and the pellets for food must be placed there: these are generally made of figs and mixt meal. Twenty days before the thrushes are taken, they are more bountifully fed, and that is done gradually, and they are toward the last fed with finer meal.

There are to be some additional conveniences to this building. Opposite to this aviary there is one of inferior size, in which the keeper is used to preserve the birds, when they are dead, that he may give an account of the number of them to his master. When the birds are fit to be taken out of the aviary, they are confined in the smaller aviary, which is adjoining, with a larger door,

with more light ; and * they call this the Store-room. When the keeper has secluded the number he wishes to take, he kills them : he does this privately, that the other birds, if they see it, may not despond, and die at a time unseasonable to the seller.

Thrushes do not breed as the stork does in the field, and the swallow under cover ; and although they are called by a name, which is of the masculine gender, it does not follow but that there are female birds among them : and this method of reasoning holds in relation to blackbirds, which come under a name of the feminine gender. Besides, some birds are adventitious, as swallows and cranes ; some are vernacular, as the common poultry and pigeons. Of the adventitious kind, are thrushes, and they fly to Italy over the sea every year, about the autumnal equinox ; and they fly back about the vernal equinox, and turtle doves and quails at another season, in immense number. That it is so is evident in the neighbouring islands of Pontia, Palmaria, and Pandataria ; for when they come there in their first flight, they stay there a few days to rest themselves ; and they do this, when they return from Italy over the sea.

Appius says to Axius : If you get together five

* *Seclusorium appellant.*

thousand,

thousand, and there is a feast and a triumph, you may soon put sixty thousand sesterces out to use. He then says to me : do you speak in relation to that other kind of aviary, which is said to be built by you for your pleasure near Casinum ; in which you are said not only to have greatly exceeded the original aviary of the inventor M. Lænius Strabo, who being our host at Brundusium first had birds confined in a peristyle, which he fed under a net ; but even that of Lucullus, in his large edifice at Tuscum. To whom I reply : as I have a river under the town of Casinum, which flows clear and deep through my villa, having its sides covered with stones, fifty-seven feet wide, with a passage by bridges over it, nine hundred and fifty feet long; straight from an island, which is at the bottom of a stream; where another stream flows into the principal river, where there is an edifice. On the banks of this, there is a walk in the open air, ten feet wide. From this walk toward the field is the situation of the aviary, guarded by lofty walls on both sides, on the right and left ; between which is the aviary, which is forty-eight feet wide, made in the form of a literary tablet with a small head. The shape of it, which is a kind of square, extends seventy-two feet in length : where it is round at the end, it is twenty-seven feet. The walk may be described as

at the extreme parts of the tablet from the aviary, in the middle of which there are coops, where there is an entrance into the area. At the sides on the right and left there are porticos with stone columns; with low shrubs in the middle, and each portico is covered with a net made of hemp to the architrave, and from the architrave to the pedestal. These are filled with birds of different kinds, to which food is administered through the net, and water flows into the place through a small channel. Toward the interior part of the pedestal, on the right and left, to the extremity of the square area, there are two ponds, not wide but oblong, facing the porticos: between these ponds there is a path leading to a dome, which is beyond, round and supported by columns, as in the house of Catulus, with some little variation. On the outside of the columns there is a wood planted, covered with large trees, so as to admit the light underneath, all encompassed with lofty walls. Within the exterior stone columns of the dome, and as many small interior columns made of fir, there is a place about five feet wide. Between the exterior columns there are nets made for a partition, that there may be a view toward the wood, and that the birds may not make their escape. Within the interior columns a net is used instead of a wall: between these and the exterior

terior columns there is a place for the birds; and there are ^y *Corbels* placed on the columns for them to rest on. Within the net there are various sorts of birds, principally of the singing tribe, as nightingales and blackbirds, to which water is administered by means of a small trough: food is thrown in under the net. In a low situation not far from the pedestals of the pillars, there is a stone a foot and nine inches high from another kind of pedestal, which is two feet high from a pond, and two feet wide, that the birds may be continually stirring on perches and small pillars. In this low situation is the pond, with a bank a foot wide, and there is a small island in the middle of it. Round the pedestal there are places made for ducks. In the island there is a small column, in which there is an axle-tree, which supports a radiated wheel for a table, so that there is a hollow tablet at the extremity of the axle-tree, two feet and a half broad, a palm deep. This is turned by a boy, who attends, so that all things are set for drinking and eating, and moved toward

^y *Mutili &c. Corbels*, from the French word *Corbeille*, a basket. This term in architecture looks to me as if it had its rise from the story related by Callimachus concerning the girl with her basket, which was covered by the leaves of Acanthus, which are the ornaments on the entablature of the Corinthian pillar.

all the ^zguests. From an eminence, ^awhere there are used to be some adventitious decorations, ducks get into the pond and swim, whence a stream comes to the two fishponds, which I have mentioned, and small fish move backward and forward ; and water is contrived to be conveyed by the wheel and table, which I have mentioned, to every guest. Under the dome in the inside, the star Lucifer, in the day ; Hesperus in the night, goes round to the lower hemisphere, and moves so as to shew what o'clock it is. In the middle of the same hemisphere, there is a globe with the eight winds, as on the dial at Athens, which ^bCyrrhestes made, and an index is moved from the pole to the globe, that it may shew what wind blows, so that you may know this in the inside. While we were discoursing, a clamour is made in the Campus Martius. We the champions of the election did not wonder at this on account of the impatience of the voters ; we were however desirous to know the cause of it : Pantuleius Parra. comes to us and tells us, that, when they were casting up the votes, some-

^z The Triclinium was spread here, it is supposed.

^a Ubi solent esse peripetasmat. This last word literally means *hangings*.

^b In some copies it is Cyprestes. Vitruvius says the person's name was Andronicus Cyrrhestes. Lib. i.

body was caught throwing tickets into the box, that he was dragged to the Consul by the friends of the competitors. Pavo gets up, because an abettor of his candidate was said to be taken.

VI. Axius says, you may freely speak concerning the peacock, because ^c Fircelius is gone, who, if you said any thing which might reflect on the family, ^d might perhaps quarrel with you. To whom Merula replies: In relation to peacocks, flocks of them began to be raised in our memory, and to be sold for a great price. M. Aufidius Lurco is said to make above sixty thousand sesterces a year of them. The cocks ought to be fewer than the hens, if you regard profit; if you have them for pleasure, it is otherwise, for the cock is the most beautiful bird. Wild flocks of peacocks are said to be in islands in foreign parts, in the grove of Juno, at Samos, and in M. Piso's island of Planasia. For raising flocks these are procured of a good age, and of a beautiful breed; for nature has bestowed the palm for beauty on this bird. They are not fit for breed-

^c His name was Fircelius Pavo.

^d Fortasse tecum duceret ferram. Literally, he might perhaps draw the saw with you. It signifies, what I expressed in English, from the natural contrariety of the saw and the timber, which it works upon.

ing when less than two years old, nor yet when they are become quite old. They are fed with every kind of grain, especially barley ; and Seius allows them a modius of barley each every month ; and they have more when they breed, and before they lay. He expects to have three young ones from his keeper, and when they are grown, he sells them for ^{c.} fifty *Denarii*, so that no sheep turns to such good account. Besides, he buys eggs, and sets them under hens, and brings the young ones, when they are hatched, into the building, which he has for peacocks, which ought to be made in proportion to the number of the birds, and which ought to have separate apartments, so secured, that no serpent, nor any other noxious beast, may be able to approach. It ought also to have a place before it, where they may go to feed in fine weather. These birds wish to have each place kept clean ; therefore the keeper ought to go about with a shovel, and to take up the dung, and to lay it up ; because it is useful in agriculture, and for littering the young brood. Q. Hortensius is said to have first served up these at a grand augural entertainment, which the luxurious then praised more than men of probity and austerity ; whom many following raised their price, so that they

sell their eggs for five *Denarii*: the birds themselves are sold for fifty *Denarii*, so that a flock of a hundred may yield forty thousand festerces with ease; or as Albutius really said, if each hen had three young ones, a sum of sixty thousand might be raised.

VII. In the mean time the ^fApparitor of Appius comes from the Consul, and says that the Augurs are cited. He goes out of the villa, but the pigeons return into the villa, concerning which, Merula says to Axius, if you had built a pigeon-house, you might think these were yours, although they were wild; for there are usually two sorts of them, one wild, or, as others call it, the rock-pigeon, which is kept in towers and at the top of the villa, ^g whence they are called pigeons; which, on account of a timidity natural to them, seek the loftiest places under cover; whence it happens that wild pigeons resort to towers, to which they fly and return spontaneously. There is another kind of pigeons, which is more tame, which, contented with domestic food, is usually fed within doors. This kind is generally of a white colour. The other wild sort

^f This officer primarily belonged to the establishment of a Roman Augur.

^g A columinibus villæ, a quo appellatæ columbæ.

is without any white or variegated colour. From these two sorts, there is a third of a mixt kind for profit; and they get into a place, which some call *Peristereon*, some by another appellation, in which five thousand are often confined. This pigeon-house is built like a large ^b *Testudo*, covered with a vaulted roof, with one narrow door, with ⁱ Carthaginian windows, or such as are wider of lattice work, that all the place may be enlightened, and that no serpent nor any noxious animal may be able to get in. The walls and the roof are laid with very fine marble plaster in the inside, and round the windows on the outside, that mice or lizards may not be able to creep to the pigeon-holes ; for nothing is more timid than a pigeon. The pigeon-holes are in general made numerous, in a regular series ; and there may be many rows from the ground to the vaulted roof. Each hole must have an entrance, that the birds may get in and out : they are of the dimension of three palms every way in the inside. Under each row tablets are fixt of the dimension of two palms, which the birds may make use of, when they go out. There must be water flowing in, which they may drink, and where they may wash ; for

^b This was a military machine, under which soldiers sheltered themselves, when they were going to scale the enemies' walls.

ⁱ The Carthaginians were said to be celebrated carpenters.
these

these birds are very cleanly : therefore the feeder must sweep the house frequently every month. The dung is useful in agriculture, so that some writers say it is the best. If any pigeon has met with a misfortune, the feeder must try to cure it; if any has perished, he must take it away ; if any young ones are fit for the market, he must take them. Those also which are breeding are to be taken into a certain place, secluded from the rest, that the old ones may be able to take proper care of their young ; which they do for two reasons, one of which is, if they become fastidious or meagre by confinement, that they may be refreshed by the wholesome air, when they get into the field ; the other reason is on account of allurement, for they always return to their young, unless they are worried by the raven, or intercepted by the hawk ; which the keepers usually take, by fixing two rods covered with birdlime in the ground in the form of a bow ; when they have placed the animal tied between them, which the hawks are used to make a prey of, they are thus deceived and entangled in the birdlime. That pigeons usually return to the same place, is evident, because many let them fly in the theatre, and they return ; which persons would not do, if they did not return. Food is set before them in troughs round the walls, which they supply by means of pipes from the outside.

outside. They are fed with millet, wheat, barley, peas, kidney-beans, vetches. Persons, who have pigeons of the wild kind in towers, and at the top of the villa, must put in some of a proper age: they must procure them neither too young nor too old; as many males as females. Nothing is more prolific than pigeons; for the bird is covered, and lays, and goes through the process of incubation, and educates its young in forty days; and they do this almost all the year: they only stop from the winter Solstice to the vernal Equinox. Two young ones are produced, which, as soon as they are grown and are come to a proper age, lay with the old ones.

Persons who fatten young pigeons, that they may sell them to advantage, put them by themselves, as soon as they are full feathered: they then cram them with white bread: they do this twice in winter; thrice in summer, in the morning, at noon, in the evening. They deprive them of their noon-day meal in the winter. When they begin to have pinions, they are left in the nest with their legs lamed; and they allow the old ones more provision for their use, for they will feed themselves and their young all day. They, which are thus raised, are sooner fattened than the others, and they are of a brighter colour. The old ones, if they are handsome, of a good colour, without any blemish, of a good breed,

breed, are commonly sold at Rome for two hundred sesterces a pair, and such as are famous for a thousand, which, when a dealer wished to buy lately at that rate of L. Axius, a Roman knight, he refused to dispose of for less than four hundred *Denarii*. Axius says, if I could buy a pigeon-house already made, such as I could wish to have in my house, I would go and buy *Columbaria* made of earthen ware, and send them to my villa. As if there were not many of this kind in the city, says Pica. Do not they seem to you to have a proper contrivance, on which some lay out the sum of a hundred thousand sesterces, of which kind you may purchase one of somebody; and before you build in the country, you may learn here in the city every day the great advantage of laying up your money in your coffers?

VIII. Merula says, go on. He says, if you wish to raise a number of turtle doves, you must build a large place, as I have already mentioned in relation to pigeons, which must have a door and windows, and clean water, and the walls and roof plastered; but instead of pigeon-holes, you must have corbels and mats, or perches in a regular order. The lowest series must be three feet at least from the ground; there must be a distance of nine inches between the rest, half a foot
from

from the upper row to the vaulted roof: the *Corbels* must be the same distance from the wall, on which the birds are always fed. They throw before them dry wheat for food, half a modius commonly to a hundred and twenty doves. They sweep their habitations every day, that the dung may not offend them, which is laid up for manure for the ground. The most apposite season for fattening them is about harvest; for the old ones are best at that time, when many young birds are produced, which are better for fattening; therefore the principal profit arises from them at that period.

IX. Axius says, let us hear something on the subject of wood-pigeons and poultry, so necessary for the table, I beseech you, Merula: we may then say something concerning other things, if it is proper. Hens are of three kinds, the villatic, the rustic, and the African. Those are the villatic hens, which they have in the villa in the country. Persons, who wish to raise these, must use skill and attention, that they may make them turn to good account, as the people of Delos mostly do; and they must consider these five points; in relation to buying, of what kind and how many of them they are to procure; in relation to breeding, how they bring up their young and lay; in relation to eggs, how they go through the process

cess of incubation and hatch; in respect of chickens, how they are to be raised: the fifth part is added as an appendage to these, how they are to be fattened. In this distribution into three kinds they are called hens, cocks, capons. They cut cocks, that they may become capons, fearing them with a red hot iron to the lowest part of the leg, until it bursts; they cover the ulcer with potter's clay. The person, who wishes to have a perfect poultry yard, although he is to procure some of the three kinds, is to choose the villatic hens mostly; in procuring which he must select such as are prolific, generally with red plumage, black pinions, unequal claws, large heads, erect and large crest; for these are better qualified for breeding. They must choose the cocks that are muscular, with a red crest, a short, full, pointed beak, grey or black eyes, light coloured red wattles, a variegated or gold-coloured neck, the inside of the thighs hairy, short legs, long claws, large tail, close pinions; which are also erect and crow often, pertinacious in fight, and which not only do not fear the animals, which are hurtful to the hens, but which fight for them. Nor, in choosing your breed, must you invariably select the cocks of Tanagra and Media and Chalcedon, which without doubt are handsome and very apt to fight among themselves; but they are not so well calculated for breeding. If you wish to raise two hundred, an inclosed place is to be allowed

lowed them, in which two large coops are to be erected adjoining each other, which may have an eastern aspect, about ten feet in length, of half that breadth, a little lower in height; each having a window three feet wide and four feet high, made of lattice, that it may afford plenty of light, and that nothing may get in to molest the hens. Let there be a door between the two, by which the keeper may get in. Let frequent perches be set across the coops, that they may support all the hens. Opposite each perch let their nests be fixt in the wall. In the front let there be a vestibule inclosed, in which they may be in the day-time, and where they may roll in the dust. Let there be a large cell besides, which the keeper may live in. Let the hens' nests be made or firmly fixt in the walls, for motion is hurtful to them during incubation. You must put straw in the nests, when they lay; when they hatch, you must remove the straw, and put in some that is fresh, because fleas and other things are usually bred, which do not suffer the hens to rest, on which account the eggs are either hatched unequally, or they get addled. When you set a hen, they say that it must not sit on more than a ^k certain number of eggs, although it has laid many more. The best season for breeding is from the vernal

^k All my copies mention xxv, which seems a great number.

to the autumnal Equinox. The eggs that are laid before or after, or even the first in the spring, are not to be set: and when you do this, set them under old hens rather than under pullets, which have their beaks and claws sharp, which ought to be employed in laying rather than in performing the office of incubation. Those of a year or two years old are the best adapted for laying. If you set pea-fowl's eggs under hens, when the bird has cherished these eggs during ten days, you may then set the hen's eggs, that they may hatch together: for twenty days are necessary to hatch the hen's brood; and less than thirty the young pea-fowl's. They must be confined, that they may sit day and night, except in the morning and evening, while food and drink is given them. The keeper must go about on certain days, and turn the eggs, that they may be equally warm. They say that it may be known whether eggs are full and useful, if you put them in water: that which is empty swims, that which is full sinks. They, who shake them, that they may understand this, do wrong, because they disturb the vital principle. They likewise say, if you hold an egg to the light, that will discover whether it is imperfect. Persons, who wish to keep these long, rub them with fine salt, or wash them with brine three or four hours; and when this is done, they lay them in bran or chaff. In setting them under the hen, they observe

that they may be unequal with regard to number. Whether eggs, that are fat on, are prolific, the keeper may understand in four days after the incubation has commenced; if he holds them against the light, and perceives an uniformly transparent colour, they think the egg is to be thrown away, and another to be substituted. You must remove the chickens, that are hatched, from the nests, and set them under that hen which has but few; and if there are a few eggs left, they are to be taken from the hen, and to be set under others that have not yet hatched. You must not make your troop of chickens to exceed thirty. You are to set ¹*Polenta* mixt with the seed of ^m*Nasturtium* and water for the first fifteen days before the chickens, on ground, that is not too hard, which might hurt their bills. They are to be precluded from water, lest it make them turgid. When they begin to have feathers in the tail, the vermin is to be often taken from their heads and necks, for they often decay on account of them. You must burn hartshorn round their coops, that no serpent may make its approach, which animals

¹ The *Polenta* of the ancient Romans was a preparation of barley, which they parched and ground; and when they used it, they sprinkled water over it and fried it. Plin. l. xviii. c. 7. Modern *Polenta* is made of the flour of chesnut, or of what the Italians call *Grano Turchesco*, i. e. Turkey corn.

^m Cress.

are usually pernicious to them. They are to be driven to the sun and to the dunghill, that they may roll, because they thrive better by this; not only the chickens but all the poultry, when the weather is favourable and warm; a net being spread over them, which may prohibit them from flying without the bounds, and to preclude the hawk or any other animal of prey from attacking them. They are to avoid heat and cold, each of which is adverse to them. When they have pinions, you must accustom them to follow one hen, that the others may be at leisure to lay, rather than employed in raising chickens. They must begin to sit at the new moon, because they which do it before generally do not succeed. They commonly hatch in twenty days. So much in respect of these hens. As I have been so profuse, I will now compensate by my conciseness. The rustic hens are rare in the city, nor are they commonly seen tame at Rome without the coop: they are not like our common hens, but to the African hens in cleanly aspect and appearance. In public exhibitions they are usually placed with parrots, and blackbirds of the most uncommon appearance, and with unusual things of that kind. They in general do not lay in the villa, but in the woods. The island Gallinaria is said to have its name from these hens, which

is in the Tuscan sea, opposite the mountains of Liguria, ^o Intemelium, ^p Albunganum, where some were conveyed by sailors, and propagated.

The African hens, which the Greeks call *Meleagrides*, are large; variegated, crook backed. These have very lately been brought from the kitchen on the ^q *Triclinium* of the extravagant, on account of the fastidiousness of mankind. In respect of the three sorts, the villatic poultry is mostly fattened : they confine them in a warm, narrow, and dark place, for motion and light are unfavourable to fattening. The best fowls are selected for this purpose, and not always those, which they improperly call *Melice*, for some of the ancients pronounced *Thetis* differently, and thus they called Medica *Melica*. These were so called at first, because they were brought from Media on account of their superior size, and they, that were propagated from them, on account of similarity. They cram them with pellets made of barley meal mixt with flower of darnel, or linseed, from spring water, having taken the large feathers from the wings and tail. They

^o Now called Ventimiglia, near Monaco.

^p Albenga in the republic of Genoa.

^q The Latin says they were served up on a *Triclinium*, which was by no means creditable.

feed them twice a day, observing from certain signs, that the first meal may be digested before they give them a second. Having given them food, when they have cleared their heads of vermin, they shut them up again. They do this during five and twenty days. Some cram them with wheat bread dipt in water, mixt with good and well flavoured wine, so that they make them fat and tender in twenty days. If they become fastidious from too much cramming, you must be more remiss in feeding in proportion, and after the first ten days you may diminish the quantity in that ratio, that the twentieth and first day may be equal. They cram and fatten wood-pigeons in the same manner.

X. Axius says, Pass on to that kind, what you lovers of Greek call *amphibious*, which is not contented with the villa and dry ground, but requires fishponds, which you call by a Greek name, and in which geese are raised. Scipio Metellus and M. Seius have great flocks of these. Merula says, Seius has got together such flocks of geese, that he observes the five gradations, which I mentioned in relation to hens. These are concerning the kind, breeding, eggs, their young, and fattening. He first ordered his servant in choosing them, that they might be large and white, for the goslings are generally like them.

There is another kind, which is called the wild breed, which does not easily herd with them, nor is it of so placid a nature. The fittest time for admission is from the winter solstice : to lay and to go through the process of incubation, from the calends of March to the summer solstice. They are partial to the water, and delight in rivers and fishponds. They do not lay more than four times a year. You must make square pens for them, when they lay, about two feet and a half ; you must litter them with straw. You must mark their eggs with some signature, for they do not hatch the eggs of other geese. They generally set nine or eleven eggs under them : they who set less, seven ; they who set more, fifteen. A goose sits thirty days in cold weather, five and twenty in warmer weather. When it hatches, they suffer the goslings to be with the goose the first five days : then when it is fine weather, they drive them to meadows and fishponds, or to marshy situations ; and they make pens for them above or under ground, in which they do not confine more than twenty goslings ; and they make these cells so that they may not have any moisture in the inside, and that they may be littered with straw or any thing else ; and that no weasel nor other noxious animals may get in. Geese feed in wet places, where they raise provision for them, which may become

become productive, and they propagate the plant, which is called ¹ *Seris*, because that being besprinkled with water, when it is dry, becomes green. They gather the leaves of this plant and serve them; that, if they drive them to the place where it grows, they may not destroy it, and that they may not perish from indigestion, for they are of a voracious nature, and they must be restrained; which, on account of their greediness in feeding, if they lay hold of a root, which they wish to force from the ground, are apt to hurt their necks, for they are weak as well as the head. If you have not a supply of this plant, you must give them barley, or other grain. When it is the season for Mongcorn, you must serve them, as I mentioned with regard to the *Seris*. When they sit, you must set barley steeped in water before them. *Polementa* or barley is laid for the goslings the two first days; green cress, that is shred small from water in some vessel, the three following days. When they are confined in pens or caverns, as I have mentioned, they serve them with barley meal, or Mongcorn, or some other tender herbs that are shred. They select for fattening goslings that are about six weeks old: they confine them in the fattening pen, and give them *Polementa* and meal mixt with water, so that they

* The Latin name is *Intybus*, or *Intybum*; Succory.

satisfy them three times a day. They give them plenty of water after their food. When thus looked after, they become fat in two months. As often as they have been fed, the place is usually cleaned, for they love a clean place, although they leave none clean, where they have been.

XI. Persons, who wish to have flocks of ducks, and to establish a place to raise them, must first choose a marshy situation, if they have an opportunity of doing it, because they are very much delighted with it. If they have not such a place, that is the most eligible, where there is a lake, or a pond, or a fishpond, whither they may gradually descend. The place, where they are, must be inclosed with a fence fifteen feet high, as you have seen at the villa of Seius, which may have one door. Round all the wall in the inside there is to be a wide bank, in which the nests are to be near the wall ; before them there is to be a vestibule made with shell work. There is to be a channel of spring water, in which their food is laid, for it is thus they are fed. All the walls are laid with smooth plaster, that cats and other noxious beasts may not get in to molest the ducks. All the inclosure is covered with a net with large meshes, that the eagle may not get in, and that the ducks may not make
their

their escape. Wheat, barley, grapestones, grapes, are given them for food, and ⁴ Crayfish sometimes, and some aquatile animals of this kind. Fresh water must always flow into the fishponds, that are in the inclosure. There are also other things of this kind, as teals, ^t *Phalarides* and *Perdices*, which, as Archelaus writes, propagate in a ^u miraculous manner ; which are fattened neither for profit nor for their delicacy ; but they will thrive. I have said what I thought in relation to the first act of the villa department.

XII. Appius in the mean time returns, and we enquiring of him, and he of us, what was said and done ; Appius says, the second part, which is usually united with the villa, now follows, and it is called by the ancient name of the hare-warren ; although not only hares are confined there in woods, as they used to be formerly, in an acre or two of ground, but deer likewise or wild goats in many acres. Q. Fulvius Lippinus is said to have forty acres inclosed among the ^x *Tarquinienfes*, in which not only those things,

^s *Cammari &c.* This fish is called *Gambero* in Italian : the French call it *Ecrevisse*, whence probably came the English name.

^t Gesner says the French call these *Picttes*.

^u From hearing the voice of the male. See Pliny x. 33.

^x In Tuscany.

which

which I have mentioned, are confined, but even wild sheep; and this is also done among the ^y *Statones*, and in other places. T. Pompeius has an inclosure for the diversion of hunting in Transalpine Gaul, which is forty miles. They have also in the same inclosure receptacles for snails, and bee-hives, and vessels in which they confine dormice; but the keeping, and raising, and feeding of all these things are easy, except what relates to bees. Every one knows that there must be walls round the warren, well plastered and high, that cats or badgers or other noxious beasts may not be able to get in, and that the wolf may not leap over them; where the hares may conceal themselves in coppices and grass in the day; and where trees with spreading branches may preclude the efforts of the eagle. Every body also knows, if he puts in a few male and female hares, that the warren may be soon stocked: so great is the fecundity of this animal, if he introduces but four, the warren is usually stocked in a short time, for they breed in a very ^z extraordinary manner. Archelaus writes concerning these, if any body wishes to know their age, it may be known from certain indications, which

^y In Hetruria.

^z This superfetation of the hare is mentioned by Pliny, vii. 11.

attend it. It has been a practice lately to fatten these also, when they take them from the warren, and confine them in pens and fatten them. There are three kinds of them. Our own Italian breed, with the fore legs short, the hind legs long, the upper part of the body of a brown colour, a white belly, long ears; which hare is said to be extraordinarily prolific. They are very large in Transalpine Gaul and Macedonia; in Spain and Italy they are of a middle size. There is another kind, which is bred in Gaul, which is entirely white. This sort is seldom brought to Rome. There is a third kind, which is bred in Spain, in some measure like our hare, but small, which they call a rabbit. L. Ælius thought the hare had its name from its swiftness, because it was light-footed. I think from an ancient Greek word, because the Bœotians called it as we do. * Rabbits are so called, because they usually make holes under ground to conceal themselves. You must have these three kinds in your warren, if you can. I think you have two sorts, and as you have been many years in Spain, the rabbit ought to be added to them.

XIII. You know, Axius, that you may have

* Cuniculi dicti ab eo, quod sub terra cuniculos ipsi facere soleant, &c.

boars

boars in the warren, and that some that are taken wild, and some that are tame and farrowed there, are used to be fattened without much trouble. For at the farm, which Varro purchased of M. Pupius Piso at Tusculum, you have seen boars and wild goats come to their provender at a certain time, on the blowing of the horn, when from an eminent part of the ^b *Palaestra* acorns were poured out for the boars, vetches or something else for the goats. I, says he, when I was with Q. Hortensius at ^c Laurentum, saw this in a superior style: for there was a wood of more than fifty acres encompassed with a wall, which he did not call a hare-warren, but a nursery for wild beasts; there was a place on an eminence, where we supped on a *Triclinium*, that was laid for us. Quintus ordered his Orpheus to be called, who, when he had come with his musical apparatus, and when he was ordered to display his talents, blew a trumpet, when such a multitude of deer, boars, and other quadrupeds poured round us, that the sight appeared to me not less beautiful than when they course in the great circus of the AEdiles without ^d African beasts.

^b It was a court, where wrestling and other exercises were performed.

^c A place on the sea-side between Ostia and Lavinium.

^d Which might have excited some terror on account of their savage nature.

XIV. Axius says, Appius has undertaken your part, Merula. The second act, which belongs to the venatic tribe, is completed in a concise way : nor do I make any enquiry concerning snails and dormice, which part remains to be discussed, for it cannot produce much profit. Appius says, this is not so simple a thing as you imagine, Axius : for a proper situation is to be chosen in the open air for the snails, which you are to encompass with water, lest you may have to seek, not the young brood but themselves, when you have laid in a stock, for breeding. They are to be confined by water, ^cthat they may not make their escape. That is the best place which the sun does not scorch, on which the dew is apt to rest, which, if it is not bestowed by nature, as it generally happens in situations exposed to the sun, you may not have a conveniency to make in a shady place, as under rocks and mountains, the bottoms of which lakes and rivers may wash, you must render moist by the assistance of art; which is done, if you set a pipe and make holes in it, to let the water fall on a stone, that it may disperse every way. They require little food, and that without a servant, and they find it not only in the area, while they are in motion, but on the wall, if

^c Ne fugitivarius sit parandus. Literally, lest a fugitivarius be to be procured. The Pandects say the office of this person was to go in quest of servants, who had run away.

there

there is no river intervening. They creep out to their food, and prolong their lives considerably, if you throw a few laurel leaves, and scatter a little bran for them. The cook generally does not know whether he is to dress them alive or dead.

There are many kinds of snails ; as the small white sort, which is brought from the country about Reate ; and there are some, that are very large, which are conveyed from Illyricum ; and some of a middle size, which are brought from Africa ; not but there are in some places in these countries some of different sizes ; for there are some very large, although from Africa, which are called *' Solitane'*, so that the shells are extraordinarily capacious : and it is the same in other countries, for they are less and greater from comparison. They breed innumerably. Their semen is small, with a soft shell, which gets hard in time. When they are raised in considerable quantity, they bring in great profit. They are used also to fatten these, and they cover a pot with Sapa and meal, where they are fed, which is to have holes, that the air may get in. This animal lives a considerable time.

XV. The *Glirarium* is built on a different plan, because the place is not encompassed with

[†] From the Greek Σόλας, it is probable.

water,

water, but with a wall. This is all inlaid with stone or plaster in the inside, that the animal may not be able to creep away. There must be trees that produce ^s berries, which when they do not bear, you must throw in berries and chesnuts, that the animals may be satisfied. You must make holes for them, where they may breed. You must let them have but little water, for they do not use much, and they are partial to a dry situation. They are fattened in vessels, which potters make, which many have in the villa, of different sorts, and some make places for the dormice to walk, at the sides of them, and a hole where they may lay their food. They serve them with berries, or walnuts or chesnuts, by which they are fattened in the dark, when they are plentifully supplied.

XVI. Appius says, the third part relating to the villa department concerning fishponds remains. What third part? says Axius. Because you are used in your younger years not to drink mead at home on account of your parsimony, shall we take no notice of honey? He tells us the truth, says Appius; for when I was left poor

^s Quæ ferunt glandem. Glans is not confined to the mast of the oak, but is taken in a much more extensive sense. It properly means such fruits as contain one seed partially covered. The trees, which bear the glans, are, *Robur*, *Quercus*, *Esculus*, *Cerrus*, *Ilex*, *Suber*, according to Pliny.

with

with two brothers and as many sisters, one of whom I bestowed on Lucullus without a portion, he having first given up to me what she inherited, I began to drink mead at my house, and to give it at entertainments to all my guests almost daily. Besides, it was my lot, and not yours, to understand those creatures, on which nature has bestowed so much ingenuity and art; therefore that you may know that I understand them better than you, hear what I have to say concerning the almost incredible nature of these insects. Merula will explain to you methodically, as he has done in respect of other subjects, what dealers in honey are used to practice.

First, bees have their origin from their own kind, or from the putrified ¹ carcases of an ox; and thus Archelaus says, wasps are the offspring of horses, and bees proceed from bullocks. They are not of a solitary nature, as eagles, but resembling rational creatures. If some ^k birds are so, they are not in equal degree; because they labour and build in company, which is not done in the other instance. They are endowed with

^b Eas novissē volucres. Varro calls bees *Volucres* and *Aves*, because they are winged creatures.

¹ The ancients believed bees sprung from the putrified bodies of cattle. The history of Samson killing the lion in the vineyards of Timnath, in the carcase of which a swarm of bees lodged, accords with this opinion. *Judges* xiv.

^k *Gracculi*, or Jackdaws.

Reason and contrivance. We learn to work, to build, to lay up our provisions from them ; for they are celebrated for these three things, food, habitation, labour : nor is the wax the same as their food ; and the honey and their habitation are different. Have not they an hexagonal cell in the comb, in proportion to the number of feet of the insect ? for the ¹ Geometricians demonstrate that this figure may be constructed in a circle, that as much space may be confined as may be. They are fed out of doors ; they do their work within, which is of the more grateful kind, and acceptable to the gods and to men ; because the honey-comb is offered on the altar, and honey is served up at the beginning of an entertainment, and at the second course. They have political institutions as men, for they have a king, and a government, and a community. As they go in quest of all things that are cleanly, therefore none of them rests in a place that is dirty, or on what has an unsavoury smell, or on what smells of perfumes ; they therefore sting the person, who being perfumed approaches them. They do not feed as flies do, for they are not seen on flesh, or blood, or fat ; they only pitch on what has a grateful favour. The bee does no harm, for it renders the work of no creature less esti-

¹ Euclid, lib. iv. prop. 15.

mable : nor is it so indolent as not to resist the person, who may endeavour to disturb its labour. They are however conscious of their imbecillity ; which may be said to be the creatures of the Muses; for, if they are at any time dispersed, they bring them back to one place by means of cymbals and other sound : and as men have bestowed Helicon and Olympus on the gods, so nature has bestowed on these flowery and uncultivated mountains. They follow their king wherever he goes; and when he is fatigued, they assist him ; and, if he cannot fly, they carry him on their backs, because they wish to preserve him. They are not lazy, and they hate the inactive ; therefore they drive the drones away, which follow them, because these do not assist them, and they consume the honey : they pursue them with loud vociferation. They stop all the places on the outside of the hive, where the air comes in, with what the Greeks call ^m*Eritace*. They live as if they were an army ; they sleep by turns, they carry on their work together, and they send out colonies ; and they do some things at the command of their leader, as if in obedience to the sound of a trumpet, and they have signals of war and peace among themselves. But, Merula, let our Axius learn philosophy, while he hears

^m Glue which served to fasten the combs together.

these

these things : because I have said nothing in relation to profit, "I now deliver the lamp to you. Merula says, in respect of profit I say this, which may be sufficient, Axius ; in which I have the authority not only of a person, who has his hives estimated at five thousand pounds of honey every year, but of our friend Varro likewise, whom I heard say, that he had two creditable soldiers in Spain, who were brothers, from the country of the ^o Falisci, who had a small villa left them by their father, and a little ground not more than an acre, that they made an apiary round all the villa, and that they had a garden, and that they planted the rest with thyme, and cytisus, and baum, which some call *Meliphullon*, others *Melissophullon*, and some *Melinon*. These were used to receive no less than ten thousand festerces for honey : they were willing to wait, that they might receive their dealer at his own time rather than at an earlier period, which might be unseasonable. Inforin me then, says he, where and how I am to make an apiary, that I may receive some benefit from it. He replies, you must make your apiary, which some call *Melitropheion*, and some *Mellarium*, in this manner. First, it must be near the villa, particularly where there is no

^a I give up my part to you to perform.

^o They lived between Rome and Tuscany.

echo; for this is supposed to be a cause of flight. The situation must be on an eminence, where the air is temperate, not hot in summer, and warm in winter; the aspect toward the point, where the sun rises in the depth of winter, is most eligible; and it ought to have such places near it, where there is plenty of provision and clean water. If there is no provision of natural growth, the master must plant such things as the bees are most partial to; which are roses, wild thyme, baum, poppies, beans, lentils; peas, basil, *P cyperus*, *medica*, and particularly *cytisus*, which is very beneficial to them; for it begins to be in blossom from the vernal Equinox, and continues to the autumnal Equinox. But as this is very conducive to preserve the health of the bees, so the thyme is very useful to them in making honey: on this account the Sicilian honey carries the palm, because the thyme there is good and plentiful. Some pound thyme in a mortar, and mix it with warm water, and sprinkle it over all the nurseries planted for the bees.

In respect of situation; that kind is most eligible, which is near the villa, but not in the portico of the villa, where some place their hives for safety. Some make them round of osier, others make them of wood and bark, others of a

* Galangale,

hollow

hollow tree, others of earthen ware; others also make them square, about three feet long and two feet wide, of ⁹ *Ferulae*; but they make them so narrow, that there may not be too much space to fill, that the bees may not become dispirited in a large and empty place. They call all these hives, from their containing a store of honey, which they seem to make very narrow in the middle, that they may imitate the shape of the bee. They cover them that are made of osier in the inside and on the outside with cow-dung, that the bees may not be frightened by their roughness; and they place these hives on corbels: that they may not be disturbed, and that they may not touch each other, let them be regularly placed. They thus make a second and third row underneath at a certain distance, and they say that a fourth must not be added. They make small holes on the right and left in the middle of the hive, that the bees may get in. They set covers on the hives, that the bee-master may take the combs. The best hives are made of bark, the worst are those that are made of earthen ware, because they are so much in-

⁹ *Ferula* is a plant called the fennel giant.

¹⁰ Hæc omnia vocant a mellis alimonio alvos. *Alvus* signifies the belly. The Romans called a hive by this name, because it contained the food of the bees.

commode by the cold in winter, and by the heat in summer. The bee-master ought to examine them three times in a month, in the spring and in the summer season, giving them a gentle fumigation, and to rid the hive of filth, and to take away vermin. He is likewise to see that there may not be too many kings, for they become pernicious on account of sedition. Some say there are three kinds of leaders among bees, the black, the red, the variegated. Menecrates writes there are two, the black, and the variegated, which is the best; so that it may be expedient the bee-master should kill the black one, when there are two in the same hive, which he knows to be apt to quarrel with the other king, and to disturb the hive, because he puts the bees to flight, or he may be put to flight with his party. With regard to other bees, the small, the variegated, and the round are the best. There is another, which is called by some the thief, by others the drone, which has a large belly. The wasp, which resembles the bee, does not assist it in its work, and it is used to be troublesome, which the bees separate from themselves. The bees differ among themselves, for some are wild, and some are tame. I call them wild, which feed in woods; they are the tame, which feed in places that are cultivated. The wild bees are less in size and hairy, but they are

more

more active. In purchasing, the buyer must see whether they are healthy or sickly. The symptoms of health are these; if there are many in the swarm, and if they are clean, and if their work is even and polished. The symptoms of ill health are these; if they are hairy and rough, or dirty, unless the working season presses hard on them; for they then are rough, and they become lean from hard labour. If the hives are to be removed to another situation, you must do that with attention, and you must consider the season, when you may do it to the greatest advantage, and you must provide proper places, whither you may remove them. In regard to the season, the spring is more eligible than winter, for they usually settle with difficulty in the winter in the place to which they are brought, therefore they generally take flight. If you take them from a good situation, where there is not good provision for them, they become fugitive. If you move them from one hive to another in the same place, you must not do it negligently; but if the bees are going to be removed, you must rub the hive with baum, for this is an allurement to them, and honied combs are to be set not far from the entrance into the hive, lest, when they reflect, they may find scarcity of food; or, when the bees are sickly from the spring feeding before, which is on the flowers

of the almond-tree and the Cornelian cherry, they become diseased, and they are to be refreshed by drinking urine. There is what they call *Propolis*, which they make use of at the entrance into the hive, especially in the summer; which physicians use in plasters under the same appellation, on which account it is sold in the *Via Sacra* dearer than honey. They call that *Erithace*, by means of which they glue the extremities of the combs together, which is different from honey and *Propolis*, and it has the power of alluring; therefore, when they wish a swarm to pitch, they rub a branch or any thing else with this and baum. The comb is that which they form hollow of wax, and each hole has six sides, in proportion to the number of feet, which nature bestowed on each bee. Nor are they said to gather from the same things, what are brought to make the four articles, *Propolis*, *Erithace*, the honey-comb, the honey. They gather their food from the pomegranate and asparagus, wax from the olive, honey, but not of a good quality, from the fig-tree. Beans, baum, the gourd, the cabbage yield a double advantage, wax and food; and the apple-tree and the wild pear produce food and honey. The poppy affords wax and honey. The almond-tree and

^s Glutinous substance, which the bees eat.

' *Lapſana* are trebly bountiful, for they yield food, honey, wax. They also gather from other flowers in this manner, and they select some things for one article, some things for more. They likewise follow another discrimination in gathering honey; for they make the liquid honey from one thing, as from the flower of ^a *Sifara*; and thick honey from another, as from rosemary: thus they make unsavoury honey from the fig-tree, good honey from cytisus, the best from thyme. As drink makes a part of their meal, you must have clear water for them to drink, and it must run near them, or flow in such a manner that it may not be above two or three inches deep, in which shells or pebbles may lie so that a part of them may be above the water, where the bees may rest and drink. Great care is to be taken that the water is clear, for that is of great service in making good honey. As every kind of weather does not suffer them to go a great way to feed, food is to be provided for them, that they may not be compelled to live on honey alone, or to leave the hives quite empty. They therefore boil about ten pounds of rich figs in six *Congii* of water, which they set before them in pellets, when they are boiled.

¹ Nipplewort.

^a Pliny says this is heath.

Some take care to place some water mixt with honey in vessels near them ; in which they put some crimson wool, that they may sip it, that they may not be too much bloated by drinking, and that they may not fall into the water. They set a vessel before each hive, and it is supplied with this. Others, when they have pounded dried grapes and figs together, pour *Sapa* over them, and set the pellets made of them, where they may be able to go for their provision in the winter. When they are going to swarm, which they usually do, when there is a numerous progeny, which the old bees wish to send forth to form a colony, as the Sabines used to do often formerly on account of the multitude of their children : this is known, because two signals are used to precede ; one is, because some days before, mostly in the evening, they form themselves in clusters at the entrance, and hang from one another like bunches of grapes ; another is, when they are going to take wing, or have begun, they make a vehement noise, as soldiers do when they decamp ; which, when they have sallied, fly within sight, expecting the rest to assemble, which are not yet collected. When they are perceived by the bee-master to do this, he will bring them where he pleases, by throwing dust over them, and by sounding a brazen instrument, when they are thus frightened. Not far from

the

the place they dress a hive with *Eritace* and baum and other things, with which they are pleased. When they have pitched, they bring the hive dressed with these alluring ingredients to them, and having set it near them, they compel them to enter by using a gentle fumigation ; and when they have formed a new colony, they settle without difficulty, so that if you set the other hive, from which they went, near them, they remain contented with their new habitation. As I have said what I thought related to the feeding of bees ; I will now speak in relation to profit, for the sake of which so much care is applied. They take the signal for taking the combs from themselves, when the hives are full, and when the combs are double : they form a conjecture from the bees, if they make a noise within, and if they are tremulous, when they get in and out ; and if, when the cover of the hive is removed, the holes of the combs seem covered with a coat of honey. When they are filled, some say that you must take nine parts, and leave the tenth : for if you take all, the bees will run away. Others leave more than what I mentioned. As they, who have a fallow in corn fields, have a better crop of grain ; so, if you do not take your honey from the hives every year, or not much, you will have your bees more assiduous and more profitable. They think the first

season

season for taking the combs, is at the rising of the Vergiliæ ; the second toward the end of the summer, before Arcturus rises ; the third after the setting of the Vergiliæ ; and if a hive is productive, more than a third part of the honey is not to be taken ; the rest is to be left for the winter. If a hive is not productive, when any honey is taken, you must not take all, nor must you do it openly, lest the bees be dispirited. In respect of the combs that are taken, if any part has no honey, or what is not pure, let it be cut off with a knife.

You must see that the weak are not oppressed by the more powerful bees, for the profit is diminished by these means ; therefore they set the weaker party under another king. Such as often fight among themselves, must be besprinkled with water mixt with honey ; which being done, they not only desist from fighting, but they feed and lick themselves, the more so, if they are besprinkled with *Mulsum*, for they apply themselves more earnestly on account of its flavour, and they become stupified by drinking. If they get out of the hive reluctantly, and some part remains in it, a suffumigation of sweet herbs must be made and applied, especially of baum and thyme. You must watch with great attention, that the bees may not perish from heat or cold. If they are at any time oppressed by a sudden shower

shower in feeding, or by sudden cold, before they foresee it, and it is seldom they are so deceived, and they lie bespattered under the copious shower, prostrate and afflicted, you must collect them into a vessel, and set them in a sheltered and warm place apart, especially in fine weather, and having burnt some blocks of the fig-tree to ashes, you must scatter them over the bees, rather hot than lukewarm; you must then shake the vessel gently, but you are not to touch them with your hand, and they must be placed in the sun. When they become warm, they are restored, and they revive: it is usual to practise this on flies that have been drowned. This must be done near the hives, that the bees may return reconciled to their work, and to their habitation.

XVII. Pavo in the mean time returns to us, and says, if you wish to weigh anchor, the casting of lots among the tribes is concluded, and they are informed by a herald, whom they have appointed *Ædile*. Appius rises immediately, that he may congratulate his candidate, and that he may retire to the gardens. Merula says, I will some time hence relate to you the third part concerning the villa department, Axius. While they rise and we look back, for we knew that our candidate was about to come, Axius says to me, I am not sorry that Merula is gone, for I am acquainted

quainted with the rest of the subject. There are two kinds of fish-ponds, of fresh and salt water; the first is common, and not without some degree of profit, where fresh water supplies our villa ponds; but the maritime ponds belong to persons of distinction, which Neptune supplies with water and fish, more for ostentation than to gratify the appetite, and they empty the master's purse rather than fill it; for they are first built at a great expence, they are filled and kept up at equal charges. Hirius received twelve thousand festerces from the buildings round his fish-ponds: he laid out all that sum for provision for the fish. It is no wonder; for I remember that he sent Cæsar at one time two thousand ^x *Muraenæ* by weight, and on account of the multitude of the fish, he sold the villa for forty times that sum of festerces. Our common and maritime fish-pond is properly called the fresh and salt water pond. Which of us is not contented with one common fish-pond? Who is there, on the other hand, that has not maritime ponds adjoining to each common fish-pond? For as Pausias and other painters of the same class have convenient repositories, where they may keep their paint of different colours; so persons have ponds, where

* They resemble the lamprey in appearance. The best were taken near Cadiz, and in the straits of Sicily.

they

they keep different kinds of fish by themselves, that they may be sacred and more inviolate than those of Lydia, which you, Varro, said came in abundance to the shore and to the altar to you while sacrificing, because nobody durst take them, when at the same time there was such a prodigious sight: so no cook dares dress these fish.

When our friend Q. Hortensius had fish-ponds built at a great expence at ^rBauli, I have been frequently with him at his villa, and I have always known him send to Puteoli to buy fish for supper: nor was it sufficient that he was not supplied from his fish-ponds, but he must take the trouble to feed the fish, and he took more pains lest his ^{*}fish might suffer hunger, than I do that my asses may not want fodder at Rosea; and indeed he bestowed more expence in feeding them, than I do in procuring provision for the latter: for I feed my valuable asses with the assistance of a boy, with a little barley and some spring-water; whereas Hortensius had at one time many fishermen in his service; and they often laid a large stock of small fish to be de-

^r Between Misenum and Baiae.

* In some copies the word is *Afni*, in others *Muli*, each of which means a species of fish, as well as an ass or a mule, which makes a pun in the original.

oured by the gteat ones. Besides, he thiēw iſt ſalted provisions, which he had purchased, to thoſe ponds, that he might ſupply his fish in bad weather from the fishmongers market as from the ſea, when they could not bring ashore fish ſufficient for a common entertainment. You might more eaſily get Hortenſius's chariot mules out of his ſtable, than a ^a mullet out of his pond. But, ſays he, he was not leſs anxious about the welfare of his fish than about the health of his fervants, and he was leſs ſolicitous that a fervant that was ſick might not drink water which was unſit for him, than that his fish might not drink water, which was impropoer for them. For he ſaid, that M. Lucullus ſuffered from this neglect, and he held his fish-ponds in contempt, because he had not fit places where the tide came in, and a conſtant supply of water; and his fish lived in peſtilential ſituations. L. Lucullus, on the contrary, had dug through a mountain at Neapolis, and introduced ſea water into his ponds, which might flow in and out, ſo that he did not yield to Neptune himſelf with regard to his fishery; for he had contrived to bring his fish into cool ſituations, as the Apulian herdſmen are uſed to do, when they bring their cattle to the Sabine mountains on account of the heat. He was ſo foli-

^a Barbatus Mulus.

citous

citous in respect of this business at his seat at Baie, that he permitted his architect to squander his money, that he might bring sluices from his ponds to the sea, by which means the tide might get in and return twice a day, from the rising of the moon, through the progress of its monthly course. This was our conversation. But there was a tumult on the right, and behold our candidate was elected Ædile; whom we meet, and attend to the Capitol. He goes home from thence, and we to our habitations. Accept this short discourse, which I have written concerning the villa department^b:

^b Varro has in this last chapter displayed much wit in what the French call *Jeu de mots*, or *parler par pointe*; from which last word, which in the Norman dialect was *point*, it is probable the English word *pun* is derived. The following are some instances of this :

Sic hos pitices nemo Coquus in jus vocare audet.—Ac maiorem curam sibi haberet, ne ejus esurirent Afini, quam ego habeo, ne mei in Rosea esuriant Afini &c.—Celerius voluntate Hortensii ex equili educeres rhedarios, ut tibi haberes Mulos, quam e piscina barbatum Mulum.

FINIS.